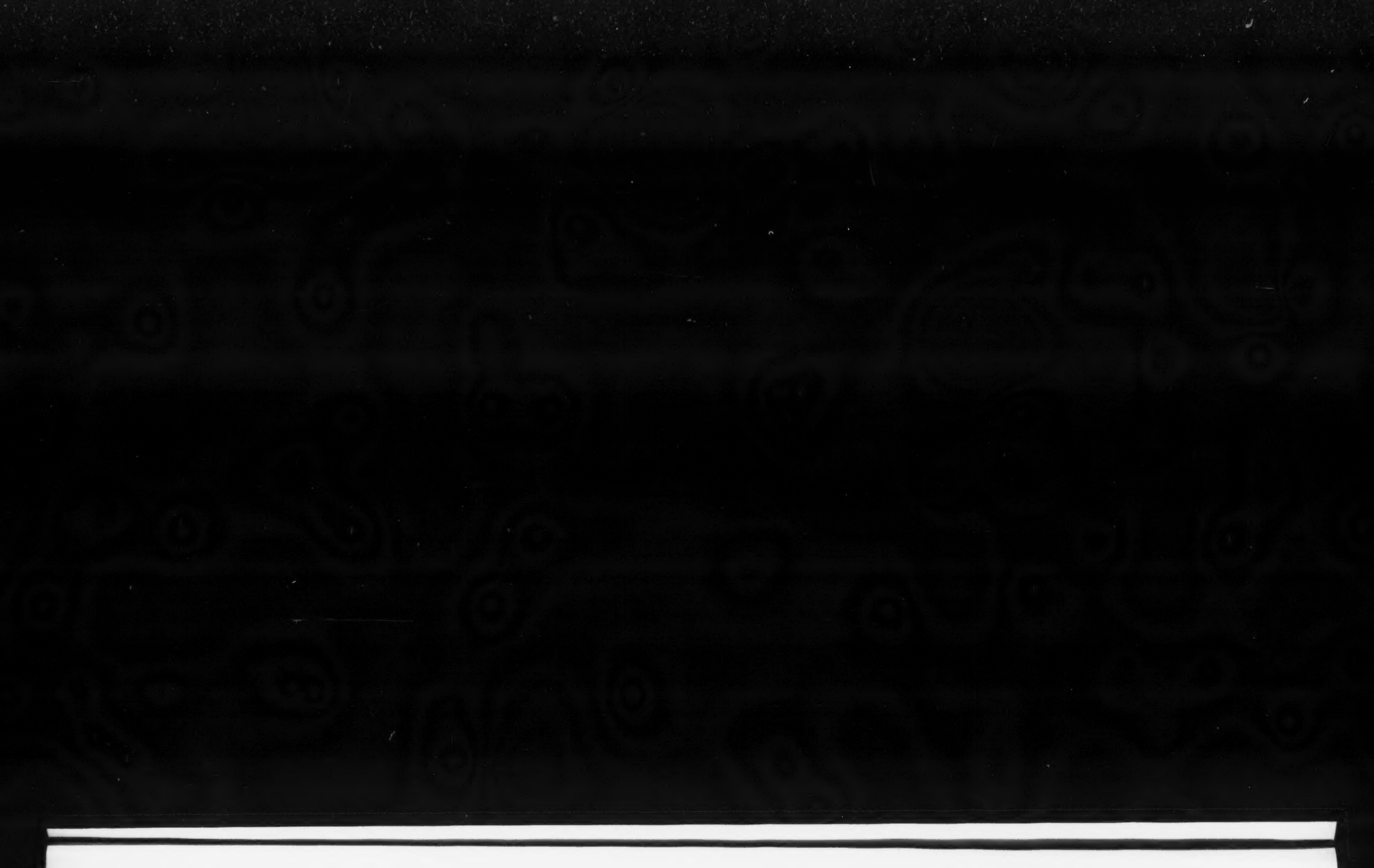
THE IRON AGE

Published every Thursday Morning by David Williams Co., 14-16 Park Place, New York.

Vol. 82: No. 10. *New York, Thursday, September 3, 1908.*

$5.00 a Year, Including Postage.
Single Copies, 15 Cents.



THE IRON AGE

New York, Thursday, September 3, 1908.

New Le Blond Milling Machine Attachments.

A number of new attachments for milling machines have recently been brought out by the R. K. Le Blond Machine Tool Company, Cincinnati, Ohio. One of these is believed to be the first milling machine attachment for hobbing spur and worm gears that has proved a practical success. Earlier attempts have been made to adapt a milling machine for performing hobbing operations by gearing the work with the spindle of the machine, but these generally have been suitable only for special jobs. The new attachment, as Figs. 1 to 4 indicate, will hob all classes of work and of any number of divisions within its capacity.

The attachments shown in the remainder of the illustrations include a universal spiral gear cutting attachment (Fig. 5), a universal milling attachment (Fig. 6), a circular milling attachment (Fig. 7), a slotting attachment (Fig. 8), a rack spacing attachment (Fig. 9), and a vertical index head (Fig. 10). Descriptions of all of the attachments, beginning with the one for hobbing gears, are given in the following, and in the order in which they have been mentioned above.

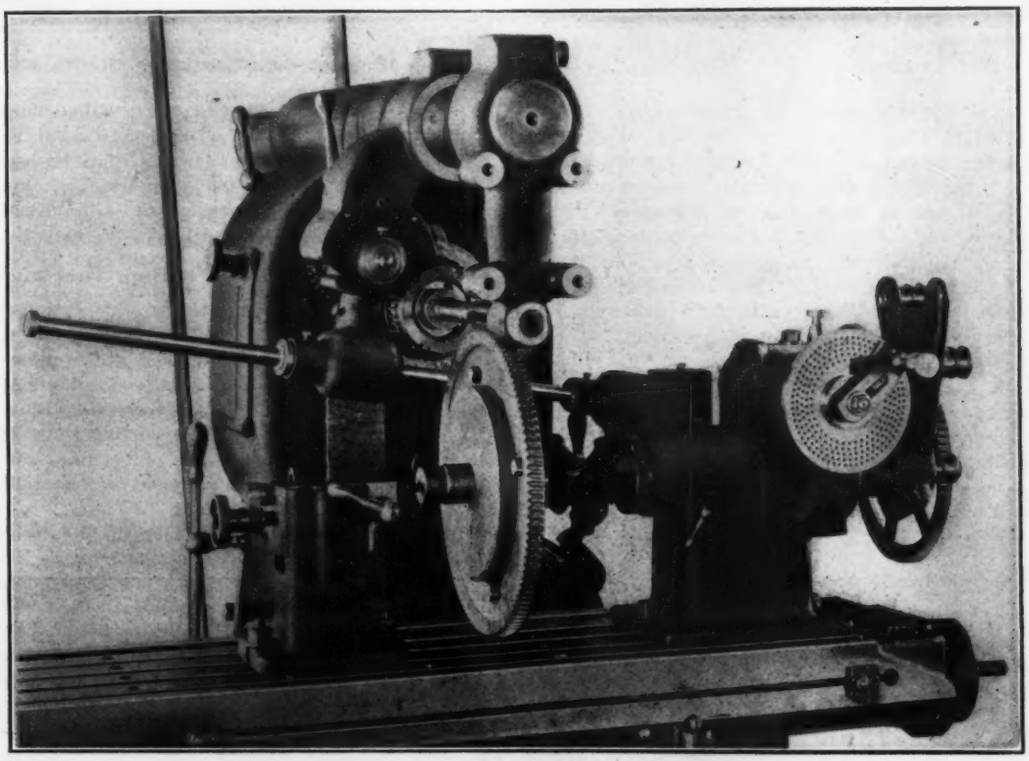


Fig. 1.—Hobbing a Large Worm Wheel on a Milling Machine with the New Attachment Made by the R. K. Le Blond Machine Tool Company, Cincinnati, Ohio.

Worm and Spur Gear Hobbing Attachment.

Equipped with this attachment the milling machine assumes all of the capabilities of a machine especially designed for hobbing gears and worm wheels and possesses the same advantages; that one hob will cut all numbers of teeth of a given pitch; that it generates correctly formed teeth; that it cuts continuously, no time being lost in returning the cutter and indexing the blank, and that in cutting worm wheels the hobbing attachment is particularly efficacious, as the preliminary operation of gashing each tooth is dispensed with, resulting in gears being produced in one-fourth or one-fifth the usual time, depending upon the gear. A very fine feed is provided, and the work can be fed into the hob automatically and stopped when the proper depth of tooth has been cut.

The attachment includes means for connecting the driving spindle of the milling machine with the main spindle of the dividing head through flexible bevel gear joints and a shaft to drive the dividing head spindle with a positive speed ratio to the cutter spindle. Various ratios of speed between the two spindles for cutting various numbers of teeth are obtained by quadrant and change gears. The attachment is bolted to the company's standard plain dividing head and its upper end is supported by the overhanging arm of the machine. It is driven by a gear screwed on the spindle nose. The splined shaft on the attachment is connected at each end by a pair of miter gears supported in swivel bearings. This combination makes a universal joint, which, unlike a knuckle joint, transmits motion evenly and positively in any position. The quadrant and change gears are carried at the end of the attachment, and are so arranged that the driving shaft can be connected either directly to the spindle for cutting low numbered divisions, or through the worm and worm wheel for large numbers of teeth.

A set of compound gears is furnished for giving a 20 to 1 reduction of the feed. This is required because the feed per revolution of the cutter is proportional to the number of teeth in the gear. For example, if when cutting a spur gear with 60 teeth it is desired to feed the work transversely to the cutter at the rate of 0.06 in. per revolution, it will be necessary to set the feed for one-sixtieth of this amount, or 0.0001 in., to obtain the required rate of table feed. Change gears are furnished for cutting all numbers of teeth from 9 to 100.

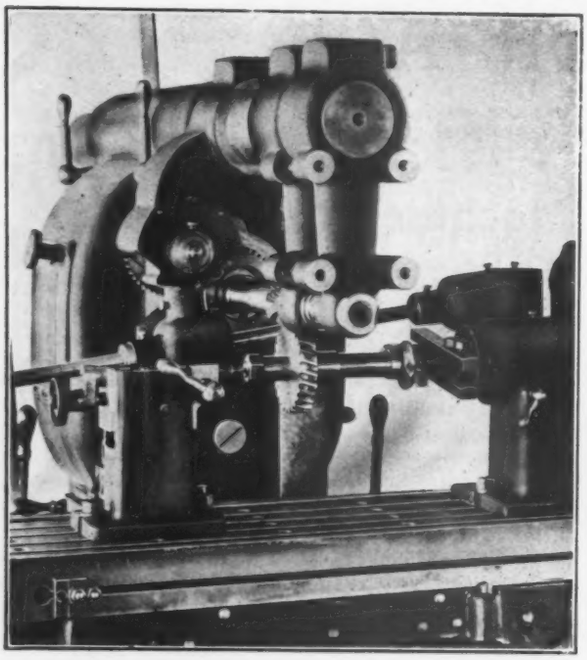


Fig. 2.—The Attachment Applied to Spiral Gear Cutting.

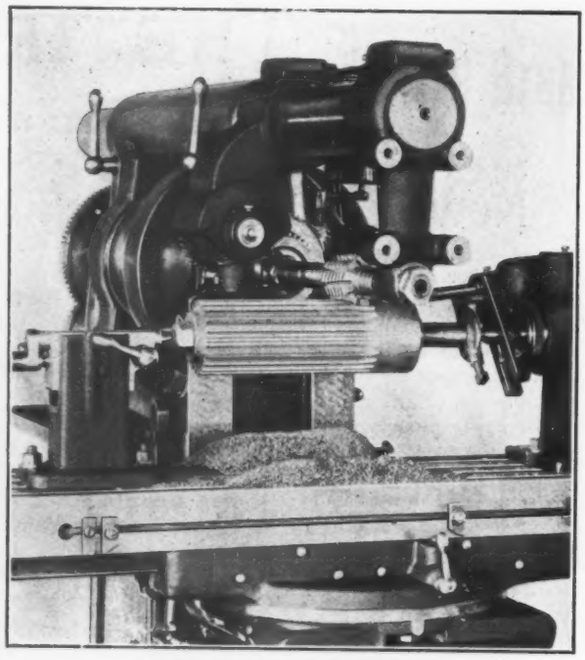


Fig. 3.—Hobbing a Long Spur Pinion with the Attachment.

The use of the attachment on various classes of work is illustrated in Figs. 1 to 4. In Fig. 1 a large worm wheel is being hobbed on a plain milling machine, without previous notching. This gear has 120 teeth, 0.39 in. circular pitch, and is about 15⅛ in. diameter. Fig. 2 shows the setting for cutting a coarse pitch worm or spiral gear. The gear has 26 teeth, 6 pitch, quadruple thread, and is 2⅝ in. diameter. The attachment in this case is geared direct to the spindle at a ratio of 6½ to 1. The work is fed into the hob with power feed, and when the proper depth is cut it is automatically tripped. These gears are hobbed complete in 12 min. apiece.

To cut spur gears it is necessary to use the attachment in connection with a universal milling machine where the table can be swiveled to correspond with the angle of the spiral on the hob. The hobbing of a long spur pinion of 6 pitch, 24 teeth and 14 in. long is shown in Fig. 3. Such a long gear, it is stated, cannot be cut on any standard automatic gear cutting machine. A contrast in an operation of the same kind is the one illustrated in Fig. 4—the cutting of large spur gears of 8 pitch and 102 teeth. The drive in this case is through the worm and worm wheel of the dividing head. Gears 16 in. in diameter can be cut in this way.

Universal Spiral Gear Cutting Attachment.

This attachment, shown in Fig. 5, is designed for cutting spirals or worms on a plain milling machine. The swivel movement to the cutter head, which allows it to be turned through a complete circle, well adapts it for cutting racks, screws, &c. On a universal milling machine the attachment can be used for cutting gears of greater than 50-degree angle, such as gas engine spiral gears, for which the swiveling movement of the table of the machine would not be sufficient.

There are several novel features in the design of this

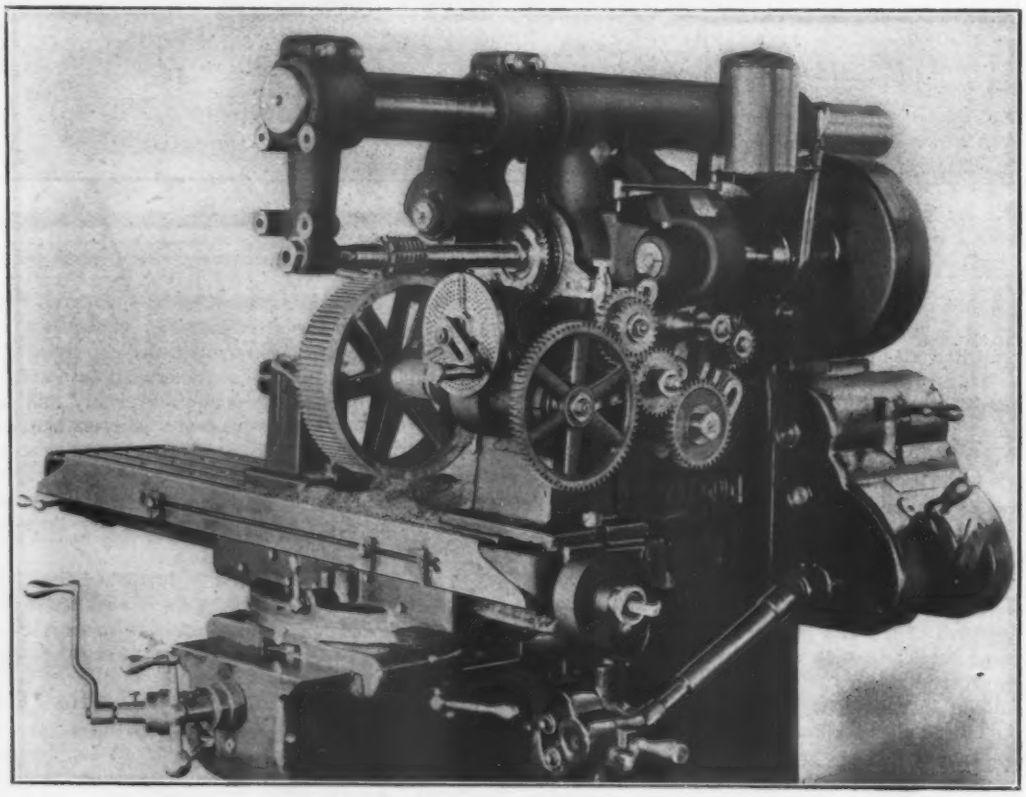


Fig. 4.—Two Larger Gears Being Cut at One Setting with the New Hobbing Attachment.

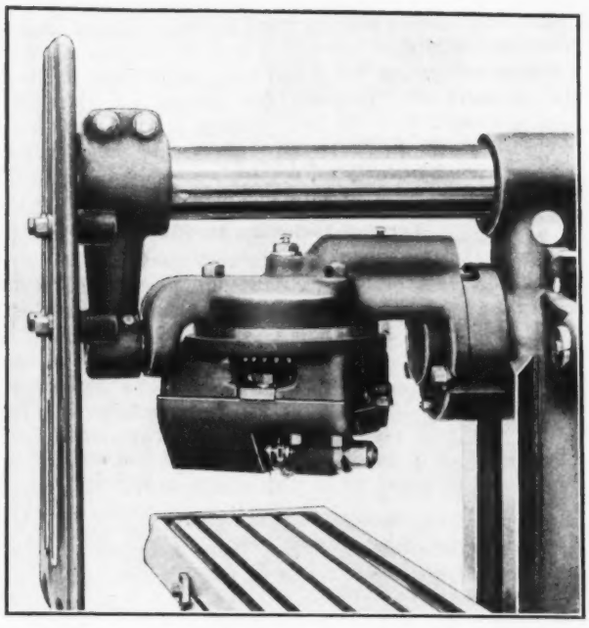


Fig. 5.—The Le Blond Universal Spiral Gear Cutting Attachment.

attachment. It is bolted to the column and the outer end is supported by the overhanging arm of the machine. The drive is from a clutch gear on the spindle, through a series of spur and bevel gears to the cutter spindle. The cutter spindle is carried in a slide which can be moved longitudinally—*i. e.*, parallel to the axis of the cutter spindle—by an adjusting screw. When the required adjustment is made the slide is clamped in position. The cutter is mounted between two bearings, one of which is removable to permit inserting the cutter. In setting the cutter the main slide is adjusted until the center line on the cutter coincides with the swivel axis of the attachment. This is done by first setting the point of the footstock center to coincide with the line on the attachment, and then adjusting the cutter to suit. Thereafter the attachment can be swiveled to any angle, and the correct relation of the center of the work and cutter is always maintained.

Universal Milling Attachment.

Fig. 6 shows a new universal milling attachment, the cutter spindle of which can be swiveled to any position in a horizontal or vertical plane. It is therefore applicable to all kinds of work involving drilling, milling or key seating at any angle. The attachment is bolted to the column of the machine, and the outer end is supported by the overhanging arm. The cutter spindle is driven by a clutch on the main spindle through two pairs of miter gears. The front bearing, which is tapered, is hardened and ground. The rear bearing is straight and is adjusted by drawing in a taper bush.

Circular Milling Attachment.

As shown by Fig. 7, this attachment is very compact, particularly in hight, to give all possible distance for work when the attachment is used in conjunction with a vertical or universal milling attachment. The worm wheel, which is large, having 120 teeth, is driven by a worm made in one piece with its shaft. The worm is carried in an eccentric sleeve, by which it can be withdrawn from engagement with the worm wheel to permit the table to be turned by hand. The end thrust of the worm is taken by ball bearings.

Power feed may be obtained from the feed box of the machine through an independent shaft, which does not interfere with the regular feeds to the table. Hence it is possible to use automatic feed for milling pieces of irregular shape, or of both straight and circular outline. The attachment can be operated in either direction, and has trip dogs, which automatically trip the feed to a line at any point. The feed is reversed by bevel gears.

This attachment is also arranged for spacing. The head wheel can be removed and an index plate or a sector substituted. Accurate dividing can be done, and the same number of divisions obtained as on the standard dividing head. The table has a taper hole at the center to receive a plug for use in gear cutting.

Slotting Attachment.

Fig 8 shows a new slotting attachment that can be swiveled to any angle in a plane parallel to the face of the column, enabling slotting to be done at any angle from vertical to horizontal. The slotter head is driven

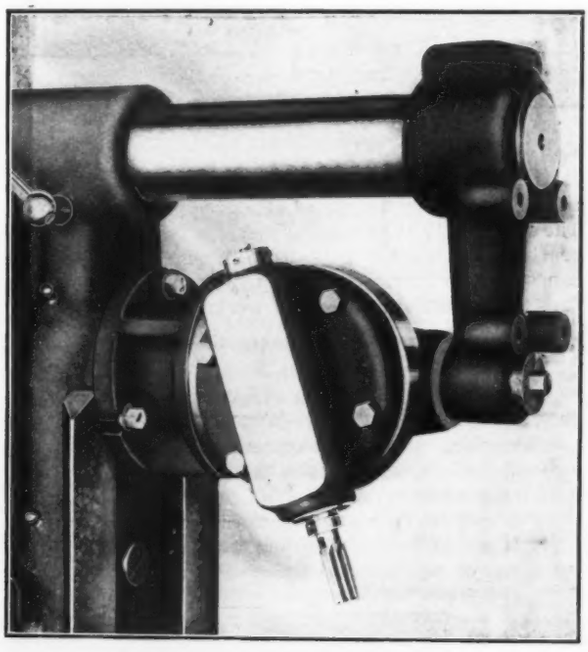


Fig. 6.—The Universal Milling Attachment.

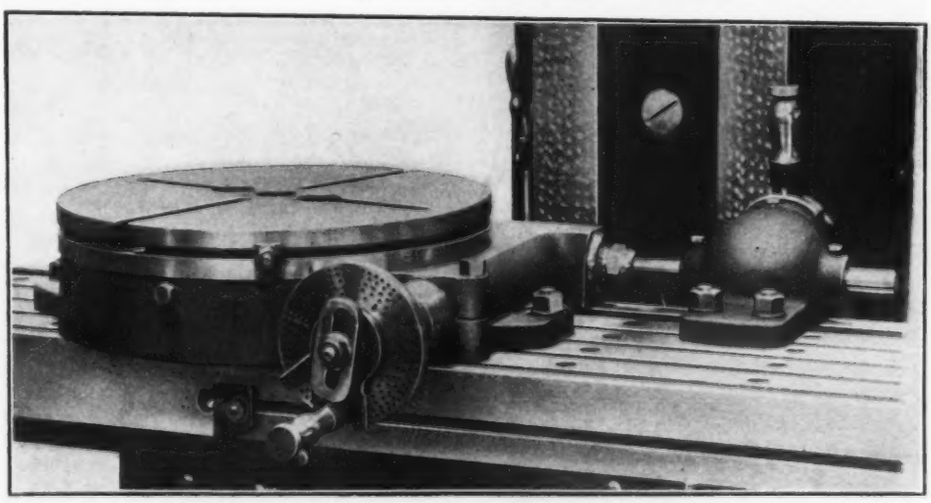


Fig. 7.—The Le Blond Circular Milling Attachment.

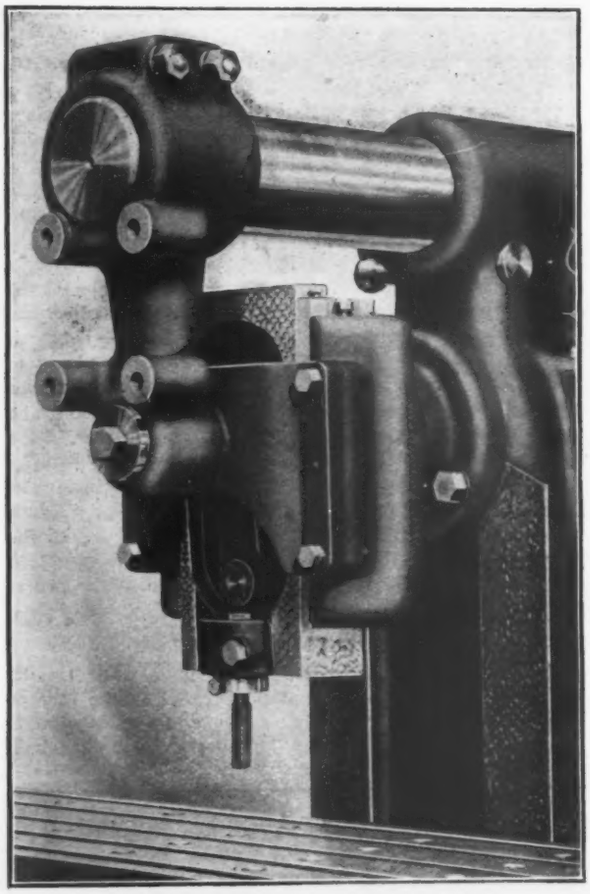


Fig. 8.—The Slotting Attachment.

from a clutch on the spindle nose of the machine and is adjustable to any length of stroke up to its maximum. The tool holder is graduated and can be swiveled in its bearing and clamped, so that the cutting edge of the tool can be set in correct relation to the work without disturbing the adjustment of the work.

Rack Spacing Attachment.

For use in connection with a rack cutting attachment or the attachment shown in Fig. 5, when applied to the cutting of racks, the rack spacing attachment, Fig. 9, has been developed. This attachment consists of mechanism for advancing the table between cuts when milling rack teeth, without depending on the graduated collar on the longitudinal feed screw of the table.

It is bolted to the table and carries a quadrant and change gears to connect the feed screws with the locking disk. This locking disk is made in two sections, and is reversible—one side containing two notches, the other side one, for spacing whole and half revolutions. Fifteen change gears are furnished for spacing all diametral pitches from 3 to 6 by half pitches, 6 to 16 by whole pitches, and 16 to 32 by two pitches, or all circular pitches from 1-16 to ½ in. by thirty-seconds of an inch, and ½ to 1 in. by sixteenths of an inch.

Vertical Indexing Head.

This head, Fig. 10, facilitates such work as the milling of the teeth of positive jaw clutches, the heads of screws, &c. The divisions are made by a vertical notched plate, which can be handled very rapidly. After the division is made the small lever shown in the side of the spindle locks it securely in position. The spindle is tapered and the front flange is extended to cover and protect the index plate from chips, &c. The spindle has a No. 11 B. & S. taper hole. The whole attachment is rigid and will stand up to very severe work.

Editorial Comment.

Without meaning to detract from the credit that is due the other standard forms of machine tools, each of which has its special purpose for which it is more suitable than any other tool, it is indisputable that a universal milling machine, especially when equipped with such attachments as those that have been described in the foregoing, is the most versatile single piece of equipment that can be put in a machine shop. In an emergency it can

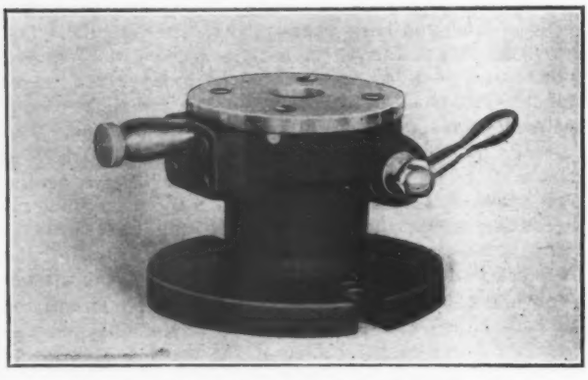


Fig. 10.—The Le Blond Vertical Indexing Head.

perform the functions of almost any other tool, or at least approximate the same result in the work done, assuming, of course, that the work is not too large or too heavy to be handled by a miller. To an extent the same may be said of a lathe, but when it branches out much beyond its ordinary field, as when the work and tool change places, it is converted practically into a milling machine itself. What is more important than the fact

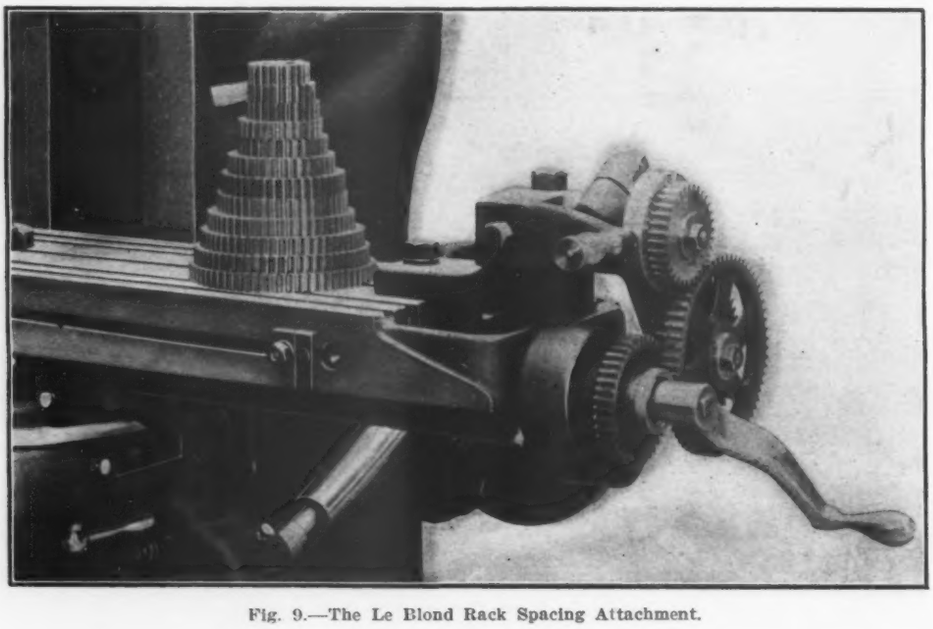


Fig. 9.—The Le Blond Rack Spacing Attachment.

that a milling machine can be substituted for most other tools, although that is not a practice to be commended where the obviously proper tools can be afforded, the milling machine has its own particular lines of work that no other tool can perform, unless it be a special machine that is an adaption of the milling machine principle.

The Evolution of Spur Gearing.

A paper by Thomas Humpage on "The Evolution and Manufacture of Spur Gearing" was read at the recent meeting in England of the Institution of Mechanical Engineers. The writer reviewed the development of gear cutters, both in Great Britain and the United States, and presented illustrations and details of various types of machines. The London *Times Engineering Supplement* gives the following partial synopsis:

One of the first known makers of wheel cutting machines was J. C. Bodmer, whose works were at Manchester. In 1835 Joseph Whitworth was granted a patent for a wheel cutting machine, and in all probability this was the first machine to generate involute teeth. The early formed milling cutters were very expensive, owing to the fact that it was impossible to sharpen them without spoiling them, and this gradually brought about the introduction of the backed off cutter. In 1874 Brown & Sharpe brought out complete sets of machine relieved involute gear cutters, and in 1880 P. R. Jackson & Co. introduced the double helical spur gearing. The Gleason Works of Rochester, N. Y., made machines for planing the teeth of spur gears up to 24 ft. diameter by 24-in. face and 6-in. pitch. Other machines are the Bilgram spur gear generating shaper and the Fellows gear shaper, while other links in the development of wheel cutting machinery are exemplified in the Brainard, the Sellers, the Thompson & Fitton, Birch's, Gibson's (worm and bevel wheel cutter), Smith & Coventry's, and the Oerlikon machines. In all these machines one tooth must be finished before the next is begun, but in the gear hobbing machine the teeth are generated in circles, and they are all begun and finished practically simultaneously. During recent years there has been a great tendency toward grinding the teeth of change gears for motor cars, and Messrs. Reinecker have brought out a machine on the same principle as that employed in the Fellows gear shaper. Gears ground by these machines show a great improvement over those which have not been ground.

The writer referred to his own machine for grinding the involute teeth of gear wheels, which work on the principle of the hobbing machine. He had ground up several cast iron wheels of 7 pitch on the experimental machine. In the best results so far obtained a cast iron wheel of 70 teeth, 7 pitch and 1¼-in. face was completely ground in 8 min. In an improved machine an arrangement will be provided to bring about even wearing of the corundum worm. He believed that every kind of metal should be ground in the soft state, no matter for what purpose the wheels were required. The wheels should be roughed out rapidly in the gear hobbing machine, with no attempt at finish, and then sent to the grinding machine to be finished.

A World Record in Steam Power Efficiency.—F. E. Junge, writing in *Power*, makes this interesting statement: That the manufacturers of high-grade steam engines have not been slow improving their products while gas power is making such forcible strides ahead, will be realized from the figures which Professor Gutermuth, of Darnstadt, reports of a Wolf "lokomobile." This is the name for a type of semi-stationary steam engines working with superheat (boilers and engines combined in one unit), which are manufactured in various sizes in the Wolf works in Magdeburg-Buckau. The engine tested had a capacity of 100 effective horsepower. The steam consumption per effective horsepower was determined as 3.93 kg. (8.6 lb.), and the coal consumption as 0.473 kg., or 1.04 lb. Figuring on coal as costing $5 per ton in the particular locality, the fuel cost per horsepower comes out as low as 0.22 cent per hour. This is probably the best coal consumption figure ever attained in the generation of steam power.

Canada's Trade Outlook.

TORONTO, August 29, 1908.—Trade in Canada improves, though less rapidly than some of the forecasters calculated. Production in the fundamental industries, such as farming and mining, never declined to the low state that most people were prepared for early last winter. The dairy industry, fostered by weather that has been almost steadily favorable since the early spring, has given a splendid account of itself, as have some branches of the live stock business. In the Cobalt region mining has kept up very well, as it has also done in the coal regions on the Atlantic, on the Pacific and in the Western interior. In some lines of manufacture, notably in agricultural machinery and mining machinery, operations were fairly well sustained, even in the dullest period. Ontario has yielded a fairly good grain crop, and the Western provinces will have at least 100,000,000 bushels of wheat this harvest. Its crop of oats will also be a fine asset. Trade should show brisk improvement when the marketing of the crop gets well started.

Canada's foreign trade in the first four months of the current fiscal year, opening April 1, shows the effects of the reaction. The exports fell off only $6,485,346 by comparison with those of the same four months of 1907, but the imports declined $39,915,809. That the exports kept so nearly up to the large volume of those of 1907 that they are compared with is to be attributed pretty much to the same home conditions as is the waning of the imports. Imports declined almost exactly $40,000,000 for the reason undoubtedly that Canadian consumers could not afford to buy so much foreign stuff as they bought in the same period of last year. Exports kept relatively high, not because production was energetic, but because consumption was in low tone. Canadians were as unable to buy of the usual quantum of their own products as they were unable to buy the usual quantum of foreign products. Hence, goods that would otherwise have been absorbed at home went to swell the exports.

It is altogether improbable that the trade of the next twelvemonth will be of the magnitude of that done in the twelvemonth immediately preceding the last one. In 1906-1907 Canadian trade was at high tide. In 1907-1908 it was probably at its lowest ebb. In 1908-1909 it will probably come somewhat short of its high water mark. Yet the money value of the natural products that the next twelvemonth starts with is far greater than that of the 1906-1907 yield. But there will be more caution in the coming year than there was in Canada's biggest trade year. The banks were not proof against the spirit of almost reckless optimism that prevailed for some years up to the latter half of 1907. There seemed to be a general feeling that there could be but one direction of movement for Canada's trade and that was forward. Setbacks in a country with such great headway, and with such a clear stretch before it, seemed out of the question. A setback, however, came, and the lesson of it that the banks are now impressing is to adhere to a conservative policy. Expansion must not be allowed to project greatly over the foundation lines of financial resources. Those who were before indulged by the banks have now to restrict their operations closely to the limits of their own solid security. It is the present policy of the banks to induce their customers to get in all that is owing to them, and thus manage to do with lighter advances. That being so, farmers who are in debt will have to pay their bills and notes before they will be allowed to begin spending on a large scale. As the total indebtedness to be liquidated by crop raisers is very large, and as bankers are likely to be exceedingly careful about making advances, the increased activity looked for in trade is certain not to get out of hand. C. A. C. J.

Last month there was started at the Rombach Works, in Germany, the great universal structural mill designed by H. Sack, of Rath, near Duesseldorf.

The Bollinger-Andrews Construction Company.

The Bollinger-Andrews Construction Company, 409-411 Empire Building, Pittsburgh, fabricator and erector of structural steel of all kinds, is making extensive additions to its plant at Verona, near Pittsburgh. The company owns over 20 acres of land and is erecting several new buildings. One of these is a pattern shop, 50 x 84 ft., of steel construction, with composition roof. The Briggs Machinery Company, Pittsburgh, has an order for its equipment, including universal saw table, hand joiners, band saw machines, Smith patternmakers' lathe, Perkins trimmers, &c., which will be operated by 25 and 40 hp. Westinghouse motors. Another new building is a power house, 35 x 50 ft., of steel and brick construction, which will contain two 175-hp. Westinghouse gas engines, direct connected to 100-kw. Westinghouse generators for furnishing current for lighting and power purposes; two Chicago Pneumatic Tool Company's air compressors, making a total of three machines, with a capacity of 1600 ft. of air for operating the pneumatic tools, &c.

A third new structure is a large steel building, 130 x 320 ft., which will house the foundry, where castings for structural supports, for the company's own use, as well as a line of heavy mill castings and ingot molds, will be made. The foundry equipment consists of two 84-in. Whiting cupolas, of 250 tons daily capacity, a Whiting elevator, ladles and a No. 6 Piqua positive pressure blower purchased through Samuel W. Hay's Sons, Pittsburgh; three Morgan 20-ton electric cranes, &c. An addition is being made to the structural building, and rotary planers, lathes, punches, beam shears, blacksmith tools and a 1050-lb. hammer are being installed. All machinery will be operated by Westinghouse motors, and when finished the structural department will have a monthly capacity of about 3500 tons. A new Standard Scale & Supply Company's scale is also being installed, and a siding two miles in length over the company's own property is being built. The company is now contracting for its supply of foundry and Bessemer pig iron, expecting to have the new additions in operation by about October 1. Thomas L. Andrews, formerly superintendent of the Marshall Foundry Company, Pittsburgh, will have charge of the foundry operations.

The New 16-In. Walcott Engine Lathe.

The new 16-in. Walcott engine lathe, shown in Fig. 1, contains an interesting device in the quick change feed mechanism. This gives six changes of feed by the action of two lever handles, and can be used in connection with thread cutting. It is a plain manufacturing lathe, with ample stiffness and cutting power. The back gear ratio is 10 to 1, with generous width of belt on the driving cone. The lathe is positive in its drive; the apron, of effective design, being without friction. The machine is built by the Walcott & Wood Machine Tool Company, Jackson, Mich.

The details of the quick change feed mechanism are shown in Fig. 2. On the rear end of the spindle are the sliding gears *a*, *b* and *c*, actuated by the handle *g*, also shown, at the head of the machine, in Fig. 1. The sliding gears engage gears *d*, *e* and *f*, according to the position of the handle, position one giving the slow speed, position two the fast and position three the medium. The number of changes of feed is doubled by means of the lever *k*, Fig. 2, also seen at the end of the bed in Fig. 1, this lever actuating a spline, engaging either gears *h* or *i* with intermediate gears *l* or *m*, thus securing the two series of feeds. It will be noted that this mechanism is a simple one, yet serves its purpose with ample efficiency.

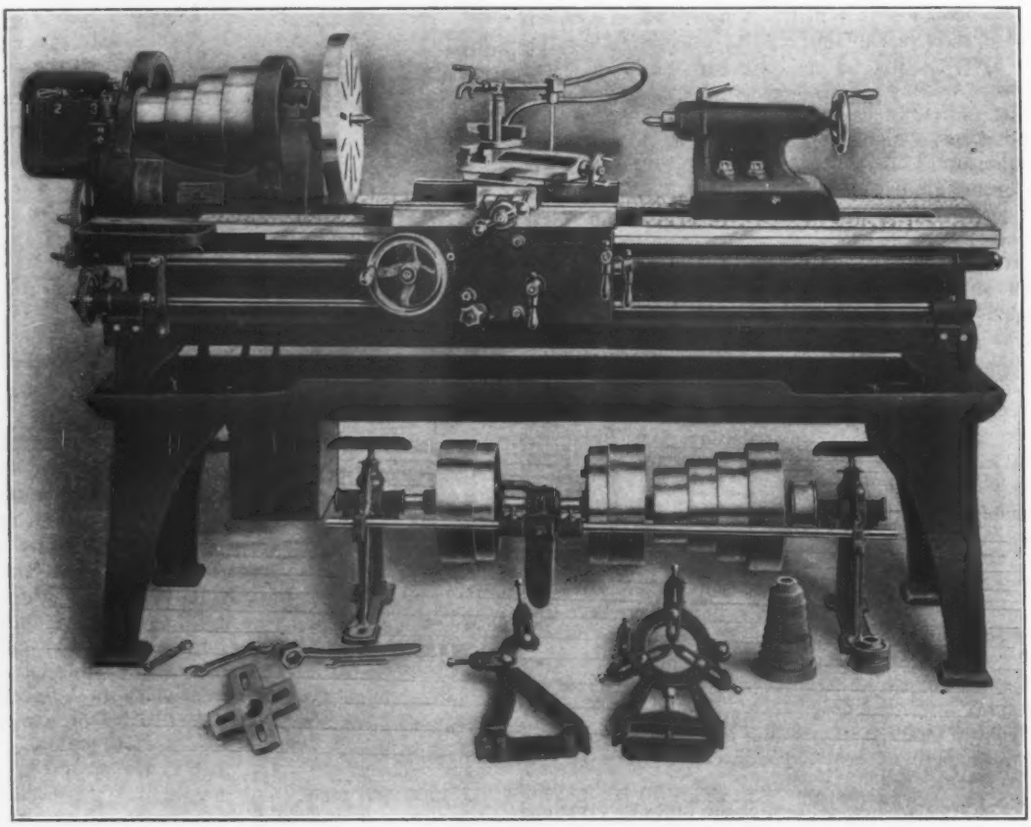


Fig 1.—The New 16-In. Engine Lathe Built by the Walcott & Wood Machine Tool Company, Jackson, Mich.

In thread cutting, the gear box at the head of the spindle is used. By this means only about one-half of the changes commonly required are necessary in getting the different pitches. The index plate corresponds with the figure numbers 1, 2 and 3 on the gear box for the different pitches. However, the thread cutting feature was not considered seriously in designing the feed box, the aim being to get a positive feed, quick change mechanism as constituting a very important feature in a manufacturing lathe.

The apron, as already stated, contains no friction whatever, being positive by means of gears, as will be noted in the detailed drawing, Fig. 3. Both the longitudinal and cross feeds in either direction can be accomplished from the apron, and the two feeds cannot be thrown in together. The binding arrangement and the means of throwing in the screw nut for thread cutting are at the front of the apron, easily accessible to the

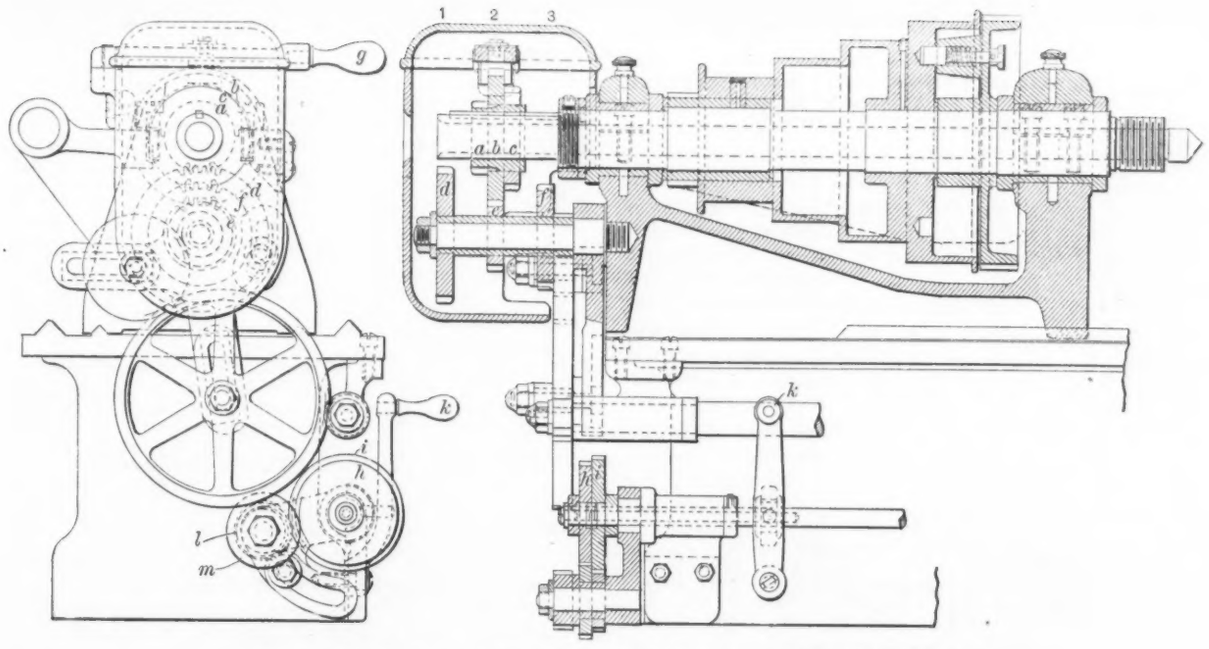


Fig. 2.—Details of the Quick Change Feed Mechanism of the Walcott Lathe.

operator. In thread cutting, one turn of the hand wheel moves the carriage approximately 1 in., so that the carriage can be moved back by hand, and by keeping count of the number of whole turns on the hand wheel the lead screw nut can be thrown in to engage at the desired point.

The lathe is designed to meet the severe service with high speed steel, with its high speeds and heavy cuts. The bed is deep and cross ribbed at short intervals its entire length. The headstock is very heavy and is bolted rigidly to the bed. The heavily constructed tailstock is provided with a set-over for turning tapers, and is offset to allow the compound rest to swivel parallel to the bed. The cones have four steps, with 2 9-16-in. face for 2½-in. belt, the largest step being 9⅜ in. in diameter. The spindle, of high carbon steel, accurately ground, has a front bearing 2½ in. diameter and 4¼ in. long, and has a 1 1-16-in. hole its entire length. The bearings are of phosphor bronze, with ample provision for oiling. The massive carriage has a deep bridge and a continuous bearing 22 in. on the ways. The lathe is tested to an alignment of 0.002 in. in both longitudinal and cross feeds.

The lathe swings over all 16⅜ in. The beds are from 6 to 10 ft. in even lengths, as desired, the 6-ft. bed taking 3 ft. 3 in. between centers. A double friction countershaft is used with pulleys 12 in. diameter by 3½ in. face, with speed forward 220 revolutions; backward, 250 revolutions. The machine will cut threads ranging from 3 to 36 to the inch. Its net weight is 1700 lb.

The Clark Steel Hoop Company.—This company, recently organized, has received a charter in which the following incorporators are named: S. A. Rinn, J. A. Weber, E. C. McKibben, J. M. Grubb, Lon Pantall, J. B. Eberhart and H. E. Bowers, all of Punxsutawney, Pa. The company proposes to build a plant at Punxsutawney for the manufacture of steel hoops and bands. Actively connected with the company is Frank L. Clark, formerly of the Sharon Steel Hoop Company at Sharon, Pa., and before that with William Clark's Son & Co., operating the Solar Iron & Steel Works at Pittsburgh, which was taken over by the American Steel Hoop Company.

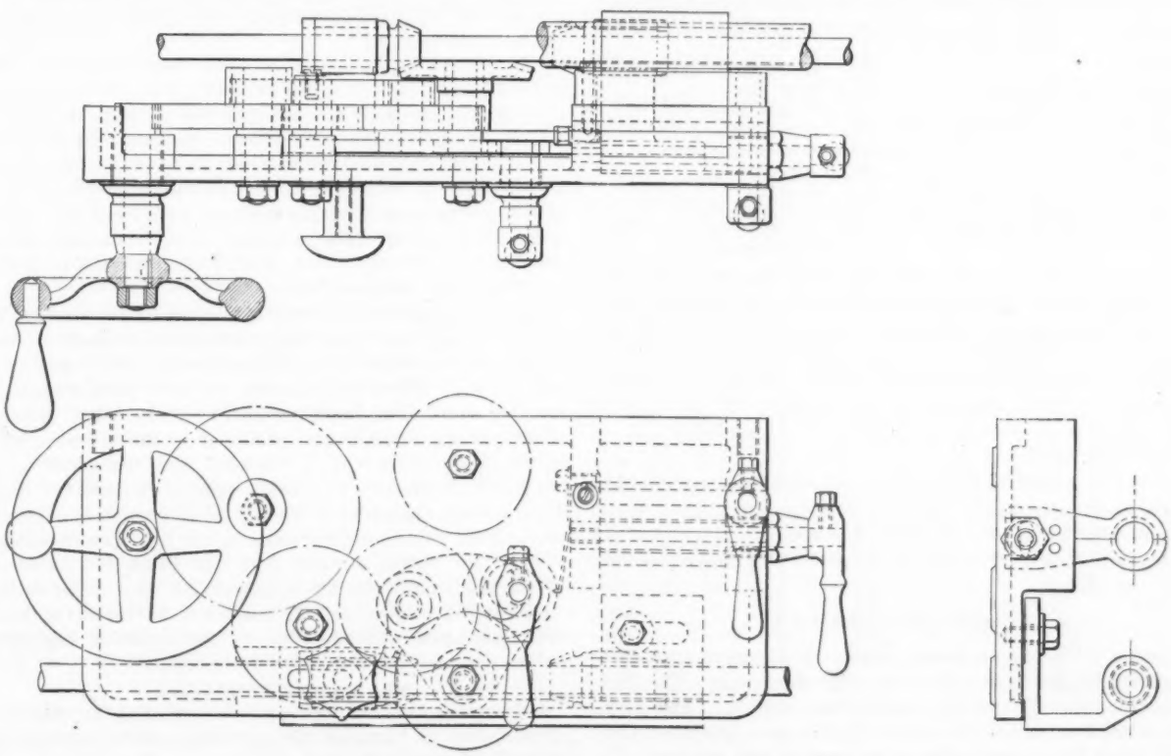


Fig. 3.—Details of the Positive Drive Apron of the Walcott Lathe.

Results of the Piecework System.

Output Increased 52 Per Cent. and Earnings of Machinists 33 Per Cent.

A remarkable showing is made for the piecework system in a report recently prepared by the mechanical superintendent of a large railroad, which is not named, and published in the *Railroad Age Gazette*. The results to the road and to its machinists are summarized in this sentence: "If the 772 engines repaired in 1906 had received general repairs to tires, boxes, flues and machinery under the non-piece-work conditions existing in 1904 and 1905, the additional cost to the company would have been $163,470, or $211.75 per engine, whereas the average rate per hour for all machinists working piecework on the system in January, 1907, was 34.2 cents, as against 25.9 cents, average rate for day work during the same month—a gain to the individual workman of one-third."

Interesting details of the operation of the system are furnished and some extracts from these are given below, taking up first the

Piecework Organization.

as it was introduced September 1, 1904:

(a) The mechanical superintendent, whose final approval of each price is necessary before it is put into effect.

(b) The assistant mechanical superintendent in charge of shop work, who approved all prices before they were submitted to the mechanical superintendent. This office has since been abolished.

(c) The shop specialist or piecework expert, who has general charge of making all schedules and putting into effect the piecework prices in all the different shops along the line and who reports directly to the mechanical superintendent.

(d) The master mechanic of the shop, who passes on all prices before they are submitted to the shop specialist.

(e) The general foreman of the shop, who personally signs all prices before they are submitted to the master mechanic.

(f) The assistant to the general foreman, who times all operations on which it is desired to make piecework prices, giving in detail the time necessary to perform the operation, which if performed on a machine would include:

Time to get machine ready.	Time to set up work.
Time to take rough cut.	Time to take finish cut.
Time to remove work from machine.	Time to set and grind tools.
Kind of casting.	Kind of tool steel used.
Kind and number of machine.	Speed and feed.
Name of man performing work.	His day rate.
Number of pieces machined.	Total cost per piece.
	The piecework price finally fixed for the work.

The workman must know in every instance that he is being timed for a piecework price, and he may also know, if he desires, the actual time that it took him to perform the operation and the piecework price that is going to be recommended for same. He has a perfect right to raise a question at any time when he is performing an operation on which it is intended to fix a piecework price.

(g) The piecework checkers who are employed in the different departments check up the amount of piecework performed by each man from day to day and make an accurate record of same on a blank card prepared for this purpose.

Comparative Efficiency.

The following statement shows shop output and cost under piecework as compared with day work. The figures include all costs in connection with the piecework organization, except the salary of the shop specialist and his office force, consisting at present of one man:

Statement Showing Cost of Engines Receiving General Repairs for the Year—January to December, Inclusive—as Compared with Fiscal Year Ending June 30, 1905.

	July to June, 1904-1905.				January to December, inclusive, 1906.			
	TBMF	Cost.	TBM	Cost	TBMF	Cost.	TBM	Cost.
Shop A....	36	$39,661	27	$19,749	79	$63,243	8	$4,305
Shop B....	130	160,417	51	35,485	207	193,280	7	3,729
Shop C....	75	68,776	19	9,386	161	116,286	1	457
Shop D....	113	113,293	4	1,394	198	173,612	4	1,659
Shop E....	37	30,438	2	733	72	50,544	0	....
Shop F....	23	25,630	12	4,165	55	56,722	12	7.0 8
Totals...	414	$438,215	115	$71,912	772	$653,687	32	$17.248
Aver. cost*.		$1,058.49		$625.32		$846.74		$539.00

* Per engine.

TBMF. = engines receiving general repairs to tires, boxes, flues and machinery.

TBM. = engines receiving all necessary repairs except flues.

Increase in shop output	52 per cent.
Saving per engines, TBMF. repairs 1906 over 1904-5	$211.75
Saving per engine, TBM. repairs 1906 over 1904-5..	86.32
On this basis had the 772 engines in 1906 received TBMF. repairs under same conditions as existed in 1904-5, they would each have cost $211.75 more, or a total of	$163,470.00
If the 32 TBM. engines had been overhauled under conditions as cited above, they would each have cost $86.32 more, or a total of	2,762.24
Therefore, total net saving on engines receiving general repairs in 1906 is	$166,232.24

The year 1906 shows an increase in output over 1904-5 of 275 engines receiving general repairs, and it is worthy of notice that but 32 engines received TBM repairs in 1906 as against 115 engines in 1904-5. In other words, in 1906 we gave practically all the engines that went through the back shop a thorough overhauling, thereby making them good for the maximum amount of service. The normal output of our locomotive shops is about 1000 general repair engines per year, and on this basis the above figures would show a saving of over $200,000.

Explanation of Output Statement.

It is not claimed, of course, that piecework is responsible for all the saving shown above. The new machinery, consisting principally of lathes, planers, boring mills, shapers, slotting machines and such other machines as are used on the machine side of the back shop had a great deal to do with reducing the cost of output.

But in this connection it is fair to assume that the large increase of output in the new machinery was much of it due to the fact that we were making a systematic study of this work and that when piecework prices were once fixed the workmen were then required to perform the work in at least the fixed time in order to make their day rate, and when the earnings of the men were increased the increase in output was of course in exactly the same proportion.

As one among hundreds of cases illustrating this fact we might cite the operation of boring tires on a new 90-in. Niles boring mill in Shop D. The machine had been run for some months on a day work basis with an output averaging about five tires per day of 10 hr., day rate of workman 25 cents per hour, but the next day after a piecework price of 17 cents per tire was fixed the same workman bored 20 tires in 10 hr., thereby increasing his earnings 36 per cent., while the capacity of the machine was increased 300 per cent.

It should be remembered also that in places like F, E and A very few improvements have been made in the boiler shop, blacksmith shop, tank shop, paint shop, carpenter shop, fitting department, tin and pipe shop and erecting shop. The improvements at these points consist chiefly of the new machinery placed on the machine side of the shop. It is a fact, however, that the addition of pneumatic hammers, air hoists, special devices for handling certain classes of work in the departments enumerated above, some new furnaces in the blacksmith shops, with a new steam hammer here and there and an occasional small power hammer, has added very much to increasing the output, but it must not be forgotten that new tools alone will add little to the output of any shop unless they are worked up to their capacity.

The Gain to Employees.

Piecework benefits the employee by affording him an opportunity to increase his earnings, as illustrated in the following statement:

Gain Per Cent. Per Hour, by Piece Work Over Day Work for All Machinists Working Piece Work on the System, Month of January, 1907.

	Piece work.			Average rate	Gain per hr. piece
	Total hours worked.	Total earnings.	Aver. rate per hour.	per hour, day work.	work, per ct.
Shop A.....	7,028	$2,167.57	$0.308	$0.249	23.7
Shop B.....	2,436	723.72	0.297	0.244	21.7
Shop C.....	1,430	569.48	0.390	0.277	40.7
Shop D.....	2,059	782.49	0.380	0.278	36.7
Shop E.....	1,916	692.82	0.361	0.273	31.9
Shop F.....	3,881	1,414.77	0.360	0.254	41.7
Shop G.....15,888		4,977.11	0.313	0.244	28.2
Shop H.....	9,969	3,931.07	0.394	0.261	50.9
Totals....44,607		$15,259.03	0.342	0.259	33.0

We use the above rates, which apply to machinists only because we had the figures at hand. The per cent. of gain to workmen in other departments is substantially the same. The increase in shop output, as shown by a preceding table, is 52 per cent., while the increased earnings of the men amount to 33 per cent.

The month of January was selected because this usually is the coldest month in the year, and if any difficulties could arise which would retard the speed of the workmen and decrease their earning power they would show up at this time.

Attitude of the Men.

We do not believe our workmen as individuals are opposed to piecework. It is only when we come in contact with the organizations to which some of our employees belong that we find an antagonistic feeling towards this method of shop organization. This statement is proved to be true from the fact that since September 1, 1904, when we first commenced to introduce piecework in all shops along the line we have had no trouble whatever with our blacksmiths, boilermakers, tin and pipe fitters, tank men, painters and carpenters.

None of the above classes of labor have been organized within the time specified except the blacksmiths. This department had the remains of an organization when we commenced the introduction of the present piecework system, but as the piecework went into effect the organization gradually went out of business.

Organization's Objections to Piecework.

The Machinists' Union objects to piecework because, as it claims, it puts one man against another, father against son and son against father in the scramble to increase their daily earnings. As a matter of fact, it simply places every man, regardless of relation, on his own merits. When the piecework price is once fairly established, it presents to all alike an equal opportunity to increase their daily earnings in direct proportion to the effort. Labor organizations always have maintained that a uniform day rate should prevail for each individual class of mechanics. Piecework, of course, is diametrically opposed to this proposition, because it fixes a fair price on the individual operation and then leaves it open for each workman to earn wages in proportion to his ability.

The foregoing tables clearly demonstrate this fact, because while the piecework prices are practically the same and in many respects the conditions are the same, a study of the figures will show that some shops earn much more than others on the same class of work. This is directly due to the intelligence, mechanical ability and efforts of the workmen. The principal effect, however, of a piecework organization is that it reduces to a minimum the number of mechanics required in the different departments of the shop, because the number of men must be reduced in direct proportion to the increase in efficiency of each individual mechanic.

It is a selfevident fact, however, that the more mechanics a shop employs in a certain line of work, the more money there is in it for the labor organizations, and it is therefore to their interest to maintain a stubborn fight against the further introduction of a fixed price for a given amount of work.

McCoy & Brandt, 619 Ferguson Building, Pittsburgh, have recently been appointed local agents by the American Electric Fuse Company, Muskegon, Mich., for its line of Allen-Bradley electric crane controllers.

The Gröndal Continuous Charcoal Kiln.

The recently published literature of the American Gröndal Kjellin Company, 45 Wall Street, New York, describes the Gröndal charcoal kiln, which has been extensively used in Sweden, though no plant has thus far been erected in the United States. The general arrangement of the kiln, which is designed by Dr. Gustav Gröndal, takes the form of a long tunnel divided into two main compartments, one for charring and the other for cooling. There is a lock at each end of the kiln to facilitate charging and discharging the cars. The wood is stacked vertically in open steel cars with a capacity of 250 cu. ft. These cars have latticed sides and ends, giving free circulation of hot gases. The cars are in contact throughout the length of the kiln, and as a car of timber is charged through the entrance lock a car of charcoal is discharged from the lock at the other end. The heavier by-products drip through the open lattices of the car and collect in a channel between the rails. There are cross leads at intervals, and these drain through into an outside sump. The gaseous by-products ascend to the crown of the kiln and are led off through condensers. The crude by-products are treated in a series of heating and distilling vessels working in a vacuum according to Bergstrom's distillation process, the surplus heat of the kiln being utilized.

Details are given of the results of three months' operation of a Gröndal kiln. The wood used was sodden spruce board edgings from sawmills, averaging 6 ft. long, 2 to 6 in. wide and ¾ in. to 2 in. thick. The gas producer which furnished heat for the charring chamber was supplied with the same edgings and with sawdust, the consumption being equal to 15 per cent. of the wood charged into the kiln.

The charcoal recovered amounted to 74 per cent. of the wood charged, or 74 bushels per cord, and the average output per kiln was 2270 bushels in 24 hours. The average recovery of by-products over the three months was as follows: Raw turpentine, 1.36 gal.; thick tar, 2.36 gal.; tar oil, 6.5 gal.; concentrate, 289 gal.—all per cord. From the concentrate 5.46 gal. of acetic acid per cord was derived, and 2 gal. of methyl alcohol. Naturally the rate at which cars pass through the kiln depends on the amount of moisture in the wood. With sodden saw edgings of pine the average number of cars withdrawn in 24 hr. is 22 per kiln. With forest air dried timber the number runs up to 36 cars in 24 hr. Owing to the specially designed regenerative system on which the kiln works uncondensed gases are returned to the gas producer to be burned, and in the case of forest air dried timber these gases suffice to do all the necessary heating.

The number of men per shift required for working two kilns is 20, of which number 9 are employed in filling cars. The total wages paid per shift for two kilns was 76 shillings 6 pence. On an output of 4540 bushels per shift the labor cost per bushel of charcoal is thus 0.2025 penny, or about 0.4 cents.

Ingot Iron Sheets.—Recent literature of the American Rolling Mill Company, Middletown, Ohio, calls attention to the work this company undertook, following out the suggestion of Dr. Allerton S. Cushman of the Department of Agriculture, Washington, D. C., as to methods of making steel less liable to corrosion. In line with his discoveries, connecting electrolytic action with rusting, Dr. Cushman urged that iron and steel be freed as far as possible from other metals which differ electro-chemically from iron. The American Rolling Mill Company says that it has succeeded in manufacturing an iron sheet which is "99.94 per cent. pure." It offers this product as less liable to corrosion than charcoal iron and very much less liable to rust than steel. It is claimed that when used for roofing, guttering, spouting, corrugated culverts and for all service in which rapid rusting ordinarily occurs, ingot iron will demonstrate the value of the special methods followed in its manufacture.

The New Plant of the Standard Welding Company.

The gradual development of electric welding during the past few years in the lines to which it was originally applied, and the new uses to which it has been found well adapted, have resulted in important extensions of electric welding plants. Keeping abreast of the greater demand for welded articles the Standard Welding Company of Cleveland has from time to time increased the capacity of its plant. Finally the limit of economical extension of the old buildings seemed to have been reached and an entirely new plant of modern design and equipment, to accommodate the company's present business and to provide for future growth, has been erected.

The Standard Welding Company was organized July 1, 1899, and first occupied 20,000 sq. ft. of floor space. As the business grew this was increased gradually to 50,000 sq. ft., with a further expansion to 125,000 sq. ft. in the new plant. At first the product was tubes and electrically welded seat posts and other bicycle parts. Six years ago clincher rims for automobiles were added and later rims for single tube tires. Four years ago the manufacture of detachable and removable rims was commenced, and the demand is such that the output of the latter largely exceeds that of the clincher and single tube rims. Besides rims the company electrically welds other parts for a large number of automobile makers. It also makes channel rims for commercial vehicles, for solid rubber tires, metal rims for all types of vehicles, and specialties, such as forgings for shovel tongs, seamless steel packages for high pressure for air, gas and mercury, special tubular stock for magazines for firearms, bands for pipe couplings, chuck rings for universal chucks, cream separator bowls, transmission shafts, pipe hangers, &c.

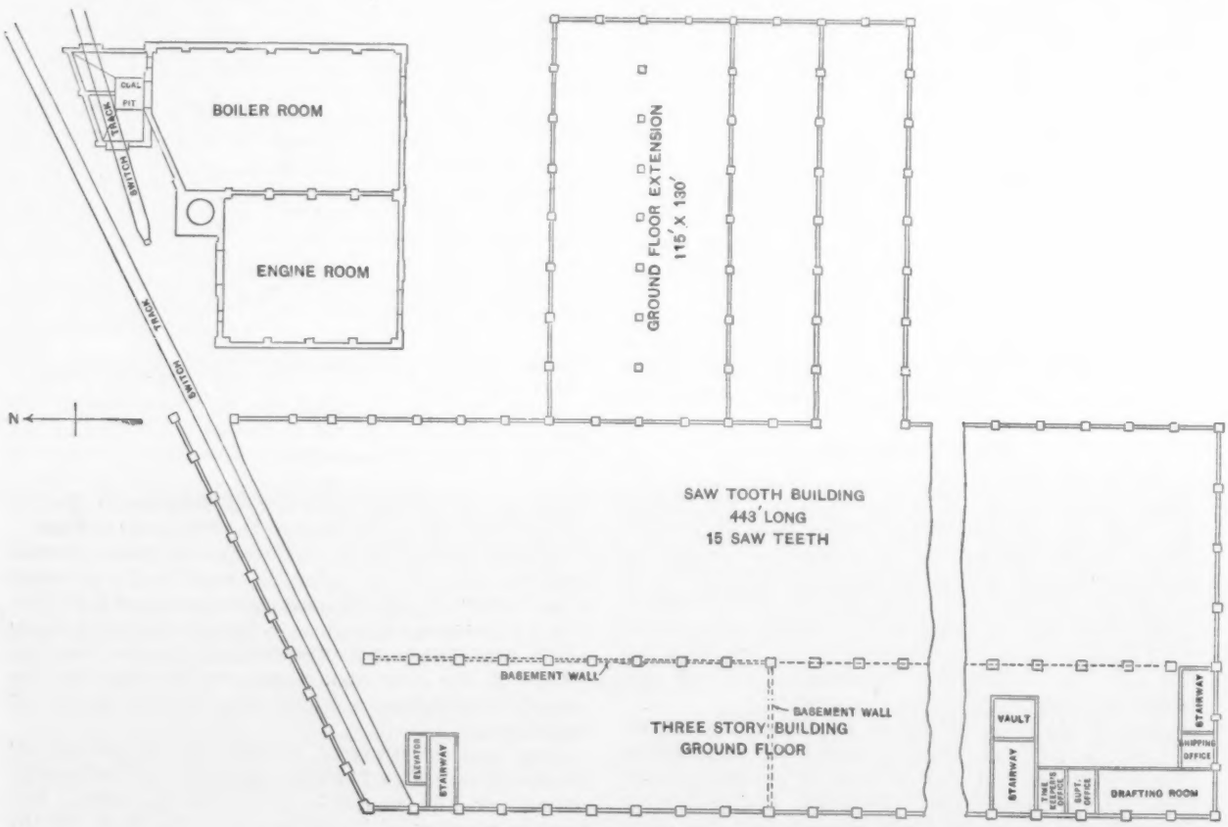


Fig. 1.—Plan of the Standard Welding Company's New Plant at Cleveland, Ohio.

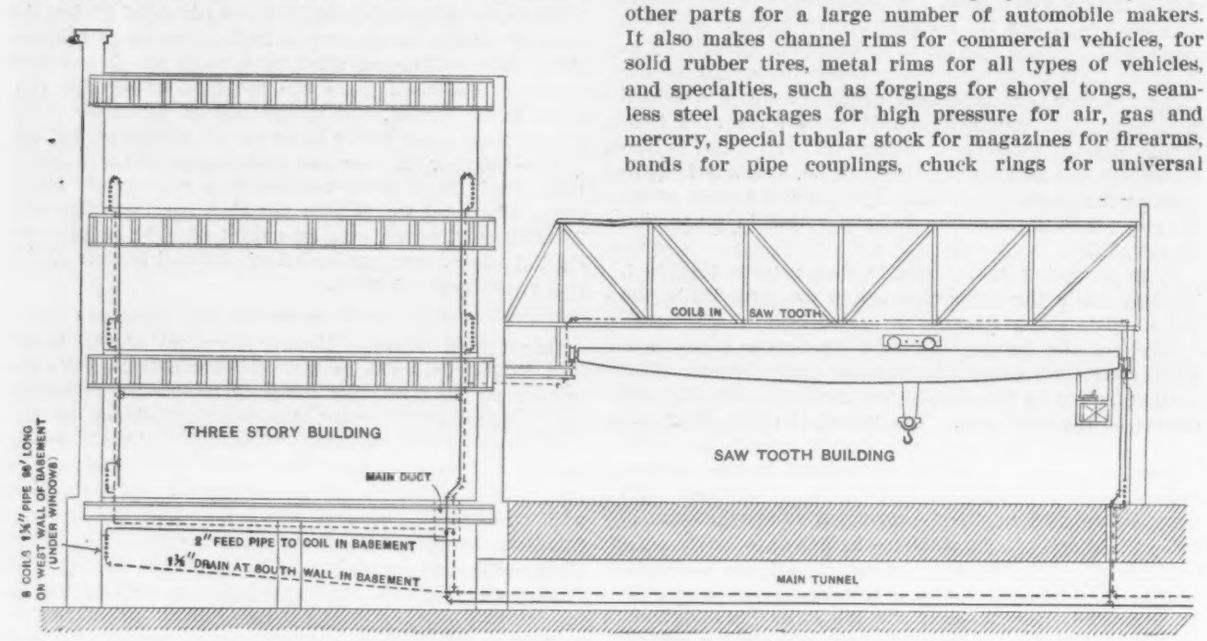


Fig. 2.—Section Through Main Building, Showing Position of Heating Coils.

As a site for the new plant the company selected a tract of land on West Seventy-sixth street, adjoining the

Lake Shore & Michigan Southern Railroad tracks. On this was built a main building of brick and steel construction, with floors of mill construction. A plan view is shown in Fig. 1. The extreme length is 443 ft., and, as shown in the illustrations, the main portion is three stories high for a width of 50 ft., while the ground floor is 125 ft. wide, being covered for its larger portion by a saw-tooth roof. There is also a ground floor extension, 115 x 130 ft., making a total width of 255 ft. on a large section of the ground floor. This gives a very large ground floor space, entirely open, with the exception of one row of posts, and served over a large area by an electric traveling crane. Figs. 2 and 3 are sectional views of the building, which give some details of the heating installation.

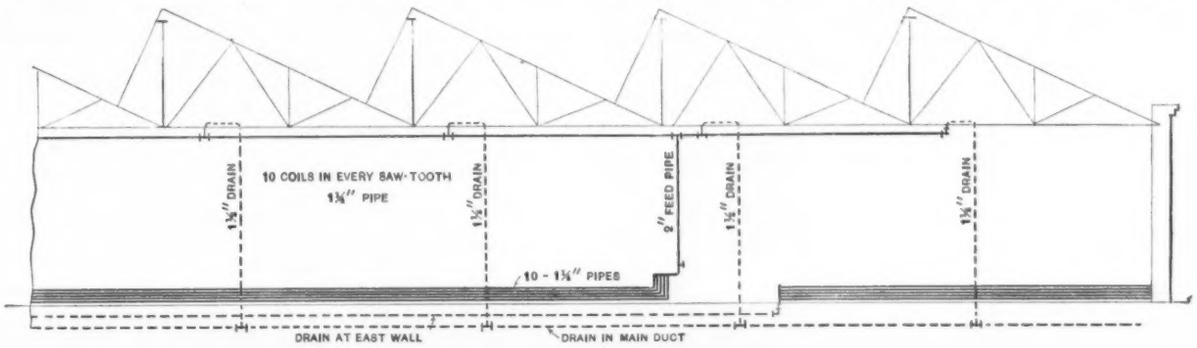


Fig. 3.—Longitudinal Section of Saw Tooth Building with Arrangement of Heating System.

Fig. 4.—View of the Tube Department in Saw Tooth Building.

The ground floor is used for the tubing department, a view of which is given in Fig. 4. On the second floor are the electric welding department and the machine shop, and the third floor is devoted to rims and rim products. The machinery is so placed that material is in continuous progress from its entrance in the factory until it reaches the shipping room. The crane is of 10 tons capacity and was built by the Case Mfg. Company, Columbus, Ohio. The machinery in the tube department is driven from power transmission in conduits, all the shafting being motor driven. The heating pipes, service pipes, sprinkler mains, and lighting, power and welding lines are run through tunnels, so that the overhead space is left entirely free. The plant is lighted throughout with Cooper-Hewitt mercury vapor electric lights. The machinery is largely special and mostly of the company's own design. Some of the electric welding machines were designed by the company and others were designed by the Thomson Electric Welding Company of Lynn, Mass.

In connection with the business is a large galvanizing plant with a daily capacity of 5 tons, and a copper plating plant with a daily capacity of from 3 to 4 tons. There are also three large gas and coke annealing furnaces for annealing products for special work. The plant is equipped with a conveying system which handles all rim products. There is 475 ft. of auxiliary track from the Lake Shore Railroad, which reaches into the factory, so that three cars at a time can be loaded and discharged under cover.

Adjoining the main building is the power plant, 80 x 96 ft., shown in Fig. 5. It contains one 310-hp. horizontal Buckeye engine, directly connected with a 200-kw. d. c. generator; a 500-hp. vertical Ball & Wood engine, directly connected with a 350-kw. a. c. generator; a 200-hp. vertical Reeves engine, directly connected with a 125-kw. direct current generator, and a 510-hp. vertical Buckeye engine, directly connected with a 350-kw. alternating current generator. The generators are of the General Electric and Allis-Chalmers types. In addition there are two Worthington feed water pumps and a fire pump. In the boiler room there are two batteries, each of two 250-hp. boilers, with chain grate stokers. Adjoining the power plant is a steel water tower and tank having a capacity of 50,000 gal., for use in connection with the sprinkler system.

The entire plant was built in accordance with plans prepared by W. S. Gorton, general manager, and E. I. Heinsohn, general superintendent of the Standard Welding Company. The structural work was designed and constructed by the Forest City Steel & Iron Company of Cleveland, and the power house was designed by the Cleveland Engineering Company. The plant furnishes employment for 400 workmen.

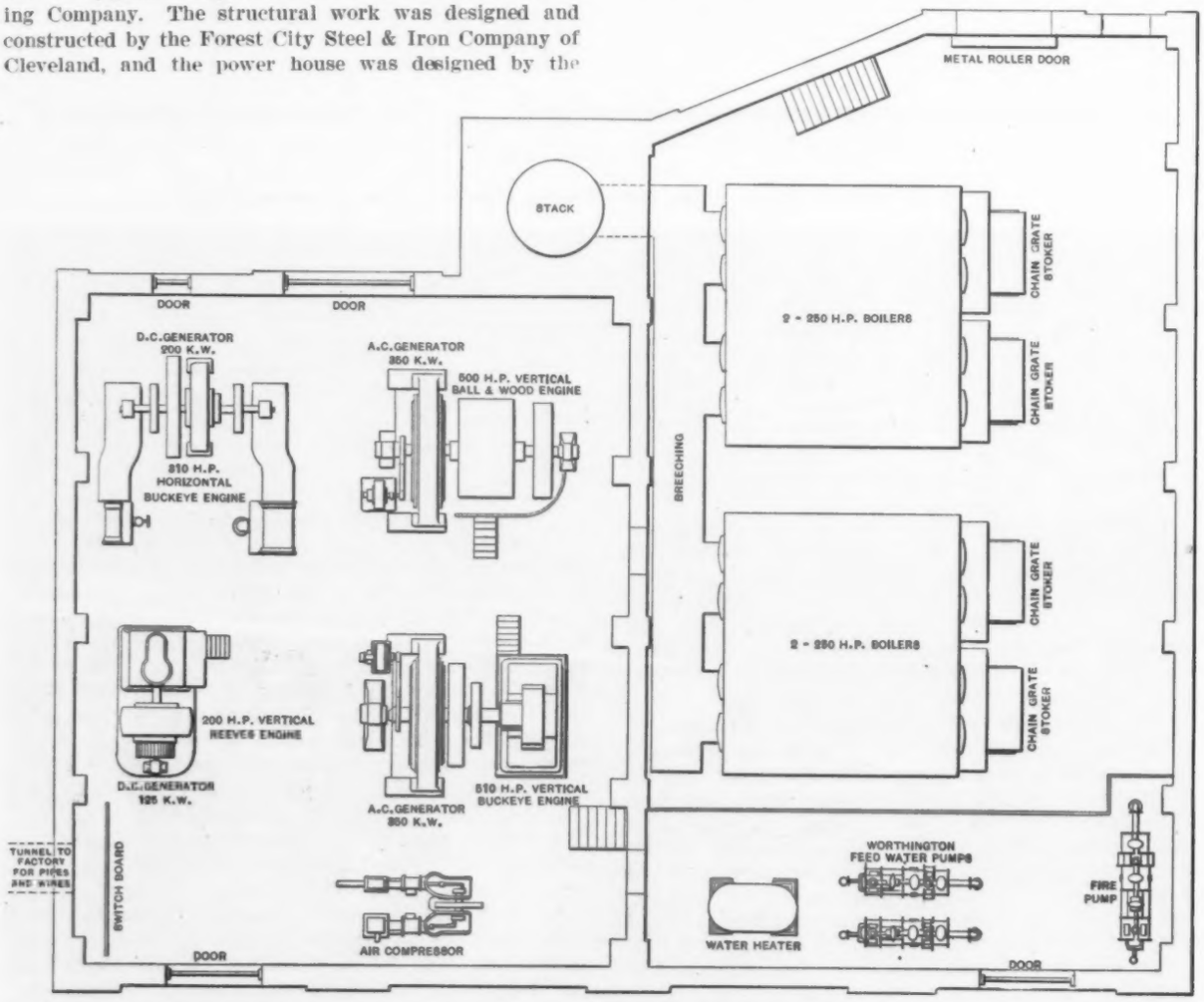


Fig. 5.—Plan of Power House.

Safety Razor Blade Drawback.—The Treasury Department has issued regulations under which a drawback of 99 per cent. of the duty paid will be allowed to the Gillette Safety Razor Company, Boston, Mass., on the exportation of safety razor blades manufactured wholly with the use of imported Swedish and English ribbon steel. "In liquidation, the quantities of imported steel which may be taken as a basis for the allowance of drawback may equal the quantities consumed as declared in the drawback entry; but in no case shall the same exceed the net weight of the exported merchandise, officially verified, with an allowance for worthless waste not to exceed 79 per cent. of said net weight."

The Amalgamated Association gives the names of 27 Western and Central Western rolling mills outside of those of the Republic Iron & Steel Company and the Western Bar Association, which have signed its scale for the year beginning July 1, 1908.

Profits of Guest, Keen & Nettlefolds, Ltd.

The report of Guest, Keen & Nettlefolds, Ltd., for the year ending June 30 shows a profit of £454,716, against £470,511, the high record for 1907. After paying dividends of 5 per cent. on the preferred and a final 10 per cent. on the common stock, with bonus of 1 shilling a share on the latter, placing £50,000 to accident and fire insurance fund and £100,000 to reserve (previously £1,000,000), the company carries forward £190,235. The total common stock dividend for the year was 15 per cent., thus maintaining the increased distribution of 1907.

The *Iron and Coal Trades Review* says the report dispels the fears entertained that the operations of this important iron and steel company had been materially affected by the "heavy curtailment of the foreign demand for British iron and steel goods which has been the most striking, not to say alarming feature of the past six months' depression. * * * The profits publicly announced from year to year are apparently exclusive of the large sums known to have been spent on various forms of improvements and extensions; and of the net profits of £2,152,614 earned in the short period of six years, £900,000 has been placed to reserve (this sum being inclusive of the £100,000 now standing to the credit of the accident and fire insurance fund), and over £1,250,000 has been distributed among the preference and ordinary shareholders. These aggregate net profits represent actually over 80 per cent. on the company's combined ordinary and preference capital of £2,685,000—and all earned in six years!—while the company's investments are set down at the huge figure of £2,241,315."

Possibility of a Car Shotrage.

The reports compiled by the American Railway Association show a decrease of 28,618 in the number of idle freight cars in the two weeks ending August 19, leaving a surplus of 253,003. The largest surplus reported this year was 413,605 for April 29. The present surplus is equal to about 13 per cent. of the total equipment in service, as the railroads covered by these reports own about 2,000,000 cars. The highest number of idle cars reported, in April, was equal to more than 20 per cent. of the total, so there has been a substantial gain in traffic.

Delay in Repairing Bad Order Cars.

In the face of these figures showing an enormous number of idle cars, shipping interests in the West are expressing fears that there will be a shortage of equipment early the coming winter. These fears are based upon the delay on the part of the carriers in repairing their bad order cars. The surplus reported by the American Railway Association does not include "shop" cars, or those marked for shop repairs, but the figures do include those in bad order, which can be repaired on track without going to the shop. The fact is well known to shippers that a large proportion of the cars now in service are more or less in need of repairs, and there is a well defined suspicion that except on a few roads practically all the so-called idle cars have been set out for repairs.

While no figures are published to show the total number of "shop" cars, it is known that the total is considerably in excess of 200,000. This, added to the number of surplus cars, would make a total of about 25 per cent. of equipment that has been out of service the past summer. The carriers have delayed their repair work so long that they may have difficulty in handling the double volume of repairs, taking care of current work as well as getting their stored cars in condition for service to move the crops and handle the growing tonnage of general traffic.

The Western granger roads have a surplus of 50,000 box cars, which will no doubt carry them through the crop moving season. The movement of grain has been light since January 1, the receipts at the principal Western markets having run about 10,000,000 bushels per month less than the preceding year, but the large crops to be moved this fall will restore the traffic of the Western roads to normal proportions.

Trouble Likely in Western Coal Equipment.

Officials of Eastern roads do not have any apprehension of trouble in taking care of their traffic, but there is a prospect of a serious shortage of coal equipment west of Chicago. The roads between Indiana and the Rocky Mountains have about 150,000 coal, gondola and hopper cars. The surplus reported August 5 was only 7000, or about 5 per cent.. The movement of coal in the West has been considerably below the normal tonnage at this season. There will be a rush of orders for domestic coal at the first sign of cold weather, which will tax the facilities of the carriers to the utmost, and it will be well for industrial consumers to forestal this movement, as the demand will be greater than either the mines can supply or the carriers can handle.

A year ago the country dealers, with the experience of the preceding year fresh in their recollection, laid in good stocks of coal in August and September, but a mild winter left them with some of this coal still on hand. This year they are deaf to all advice to buy early. Some of the Western roads have strongly endeavored to induce dealers on their lines to start an early movement, but their efforts have been rewarded by a very light movement of threshing coal. The retail dealers lost money last winter on the stocks they bought early in the fall. Their customers, the consumers, refuse to buy now, and the dealers prefer to wait and buy only when they are sure of a profit from immediate sale.

The conditions that will grow out of a shortage of cars will prove fortunate for the coal industry, but troublesome for manufacturers and other large buyers of coal. A shortage of equipment makes spot coal sell at a premium, and few coal firms can resist the temptation to delay deliveries on their yearly contracts. The margin on these contracts is very small, only a few cents per ton, and the temptation to sell the coal to spot buyers at a profit of 50 cents to $1 per ton is well-nigh irresistible. The coal men have not had an opportunity to do this for several years.

Conditions in the East and South.

East of Chicago there is apparently no prospect of serious trouble. The carriers operating in the Pennsylvania, Ohio and West Virginia coal fields have a large surplus of coal equipment, and also a large surplus of box cars which are not likely to be needed for some months. Until this year the Eastern roads could not keep their cars at home, and they always had 50,000 less cars on their rails than the number they owned. The Southern and Western roads, however, have sent all these Eastern cars home to save paying per diem on them, and this will protect the Eastern carriers against shortage a long time after trouble has begun in the South and West.

There is every prospect of a severe car shortage in the South. Lumbermen are having trouble already, although their shipments have not yet reached their normal volume, and when the cotton season comes on, with an increased movement of lumber, iron and other commodities, the equipment available will be wholly inadequate. The Southern roads have always used a large proportion of Northern equipment, and the cars that have been sent home to save per diem will be missed.

The Passing of the Iron Warrant.

Under the above caption the London *Statist* of August 15 discusses the recent course of events in the iron warrant market in Scotland and England, concluding as follows:

"But the iron market is no longer controlled by the warrant market. The entire transactions of a month nowadays hardly exceed the operations of a single day in the eighties. A Scotch warrant represents 300 tons of No. 1 and 200 tons of No. 3 ordinary Scotch iron. A Cleveland warrant represents just 500 tons of Cleveland No. 3 foundry iron. It is not, then, the same thing as a Scotch warrant, but it has taken the place of the former as the vehicle of speculation. Now the Scotch warrant was instituted some 60 years ago, when purchasers for the rise had acquired a large quantity of iron which they did not wish to take delivery of or could not conveniently pay for. There were also some who were able and willing to pay for their purchases, but not to take delivery as the iron was made. Heretofore local buyers had accepted the delivery orders of the smelters in return for their cash payments when immediate shipments were not required; but this did not seem good enough to English and other buyers, who wanted to hold the stuff. Moreover, the Scotch law of hypothec aroused doubts as to the ownership of iron in a maker's yard in the event of bankruptcy. Anyhow, Messrs. Connal & Co., who were extensive bonded storekeepers and timber warehousemen, were asked to provide accommodation for pig iron, and they turned over one of their timber yards for the purpose, giving their receipts for the iron handed over to them. These vouchers rapidly became as negotiable as stocks and shares, and an iron warrant could be as easily exchanged for cash as a banknote. When this negotiability was once established it became the easiest thing in the world to finance the making of and speculating in pig iron. In dull times makers could turn their output into cash merely by trundling it into Connal's, and a speculator for the rise had merely to deposit the warrants with his banker to obtain an advance of 75 per cent. of their market value.

"Thus was speculation in pig iron stimulated until it became one of the most noted avenues of adventure in the world. And so the warrant market became also a sort of barometer of trade, while the iron ring became an arena in which fortunes were made and lost year by year. But these days are gone. Whatever economic value the warrant stock of pig iron may have had—and it had some, as well as some ethical evil—is now lost. The iron warrant is nowadays little more than a figure of speech."

The Dill Variable Speed Drive.

A variable speed power transmission through which any ratio of speed can be obtained within wide limits is a new product of the T. C. Dill Machine Company, Philadelphia, Pa. As may be seen in Fig. 1, its special features are two series of thin, hardened steel disks connecting two shafts through an intermediate one, the disks of each series overlapping one another. The disks on the two outer shafts are flat—that is, have parallel sides, and the disks on the intermediate shaft have tapered sides, being thicker at the center than at the periphery. All of the disks have square holes in the center and are fitted loosely on square shafts. To maintain the disks perpendicular with their shafts two heavy cast iron collar disks are provided on each side of the disks on the intermediate shaft. The outer cast iron disk in each case is fixed rigidly to the shaft, while the other or inner one has a long hub and is permitted a lateral movement on the intermediate shaft. The coil spring tends to force these inner disks outwardly, so as to press the thin disks together between the fixed and movable collars. The points of contact of the flat disks are always at the peripheral edges, while the points of contact of the tapered disks vary along their entire faces. The intermediate shaft being mounted on rocker arms may be moved by a lever so that a movement in either direction causes a deeper intermeshing of one of the series of disks and a shallower intermeshing of the other, thus changing the diameter ratios and varying the speed of the driven shaft, while the driving shaft speed remains constant.

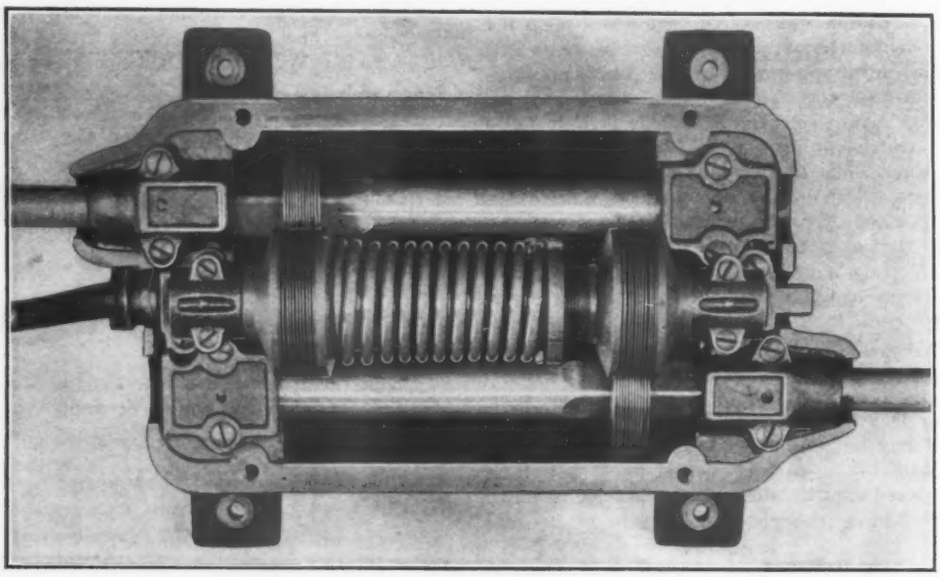


Fig. 1.—The Variable Speed Transmission with Cover Removed, Made by the T. C. Dill Machine Company, Philadelphia, Pa.

Since there is only a small area of contact between the flat and taper disks, and as the disks have a rolling action upon one another, the frictional resistance is comparatively small. Great power with exceptional endurance is provided by first determining the proper pressure for one disk from the standpoint of endurance, and then adding disks sufficient to multiply the power to that required. The tension of the spring upon the inner collar disks of the intermediate shaft is adjustable at one end, where the spring terminates in a collar threaded on the hub of one of the inner collar disks. The spring pressure is thus regulated to suit the load at a given speed, and as the speed is increased the pressure is reduced and *vice versa*. A constant horsepower is transmitted by so constructing the spring that its tension varies with the speed due to the difference in thickness of the taper disks. As the flat disks approach near the center where the taper disks are the thickest the spring is forced back and thus exerts greater pressure the slower the speed. By giving this spring the right length and size the difference in strength may be proportioned in relation to the variation in speed, which results in constant horsepower.

Three shafts and four sets of disks in two groups are used in the type illustrated. To give a large range of speeds with small disks and permit the driving and driven shafts to have fixed centers the speed variator may be so designed as to make the receiving or constant speed shaft the high speed one, and all variations of speed will then be made with a reduction, or the constant speed shaft may be driven at what is the required medium speed, and the minimum and maximum speeds of the variable speed shaft will then be lower and higher than that of the constant speed shaft. The former style of drive is believed by the maker to be admirably adapted to embodiment in the headstock of a lathe or boring mill.

Fig. 3 shows the drive applied as a part of a countershaft driving a 20-in. lathe. In this arrangement a range of speeds of 30 to 1 is obtained, and any intermediate speed within that range is available. It also shows an ingenious connection between the slide rest of the lathe and the feed variator, so that a practically constant cutting speed is maintained, regardless of the diameter of the work. The connections are better shown in the detail given in Fig. 4. When the slide rest is moved toward the lathe center the variator operating lever is shifted so that the rotary speed of the lathe is increased. In facing work, as the diameter of the work at the cutting point decreases the lathe runs faster and faster, keeping the cutting speed very closely constant.

In one form of the device contained in a lathe headstock the flat disks fitted directly to the spindle are 14

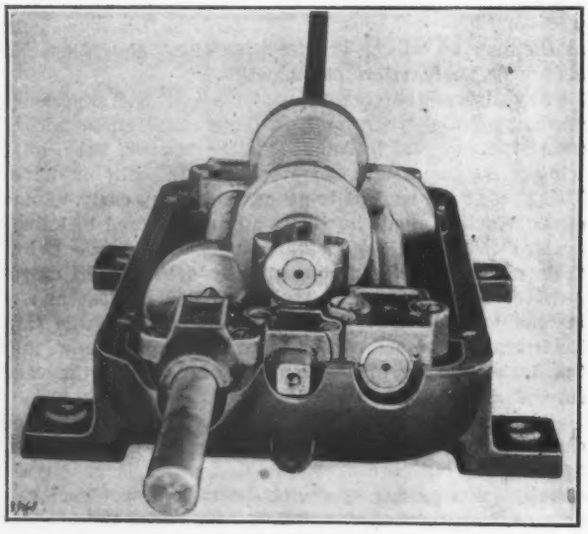


Fig. 2.—An End View of the Dill Drive, Also with the Cover Removed.

in. diameter and mesh with taper disks in their group on the intermediate shaft 12 in. diameter. On the other end of the intermediate shaft is another series of flat disks of 12 in. diameter which intermesh with taper disks on the constant speed driving shaft, which are also 12 in. in diameter. The points of contact of the taper disks will vary from the full diameter to nearly the diameter of the shaft, and by using only a small number of disks a sufficient amount of power is obtained.

The general advantage of using this drive is that since the cone pulleys of the lathes are not required to change the speeds a wider belt may be employed by mounting over the cone a pulley of wider face. In the lathe connection, as shown in Fig. 4, the hand lever on the rock shaft at the rear of the lathe is available for changing the speed of the lathe at will when the notched link to the slide rest is lifted out of engagement with the curved lever on the rock shaft. It is to be noticed that the curved lever which accomplishes the automatic variation of speed with decreasing diameters is clamped to the rock shaft with a friction hold. This is for the purpose of introducing a yielding point in the connection, so that if the speed unintentionally becomes too great and would introduce a strain on any of the mechanism the clamp hold on the rock shaft will give and prevent any damage. The hand lever is splined to the rock shaft so as to have longitudinal movement upon it, and being fitted to the carriage is always convenient to the operator. A similar automatic arrangement can be provided on the device when built in the headstock of a lathe. In such an arrangement the same advantages are obtained of a wider belt on a larger diameter pulley, giving greater power, and instantaneous speed changing to any speed within the range of the device.

The Figs. 1 and 2 show the device with the cover removed in the form in which it is put on the market as a countershaft or speed box for general use. These are made in several sizes ranging from ½ hp. up, and with a speed range of 5 to 1, although a greater or less range can be had if desired. In this drive the taper disks are all on the intermediate shaft with the heavier cast iron collar disks and springs. Constant horsepower is obtained throughout the speed range by the same principle as already explained. The speed of the constant speed shaft is midway between the minimum and maximum speeds of the variable speed driven shaft, thus giving a medium initial speed.

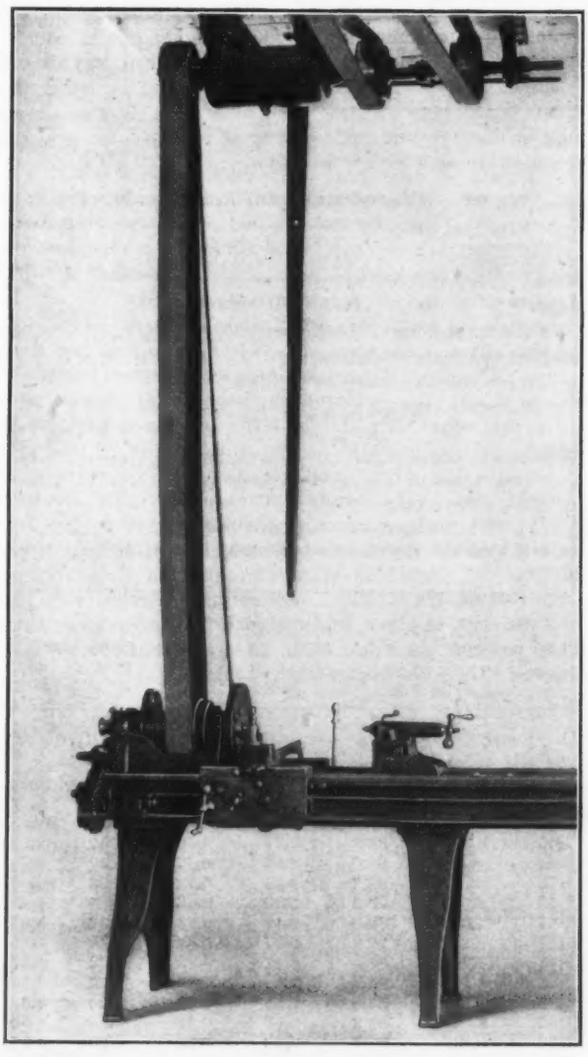


Fig. 3.—The Dill Drive as Applied in a Countershaft Connected to a Lathe.

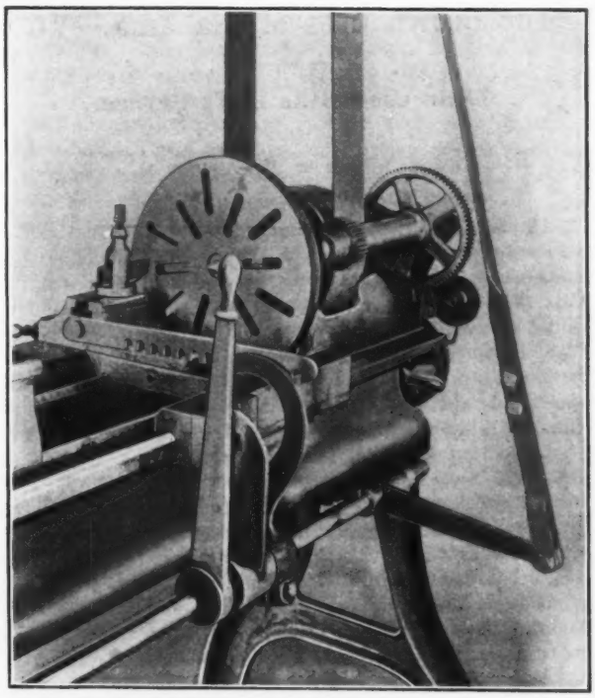


Fig. 4.—Rear View of the Same Lathe, Showing the Connections for Varying the Speed According to the Diameter of the Work.

The drive shown in the first two illustrations is capable of transmitting 5 hp. It measures 23 in. long and 15 in. wide over all, including the extension for the feet and bearings. The frame proper is 19 in. long by 11 in. wide and 9 in. high. The disks are 4 in. diameter and 3-64 in. thick. The constant speed shaft is intended to run at about 400 rev. per min. With the oil tight cover which is provided the mechanism is entirely inclosed, so that it can run in an oil bath. The device can be operated in any position, either on the floor or inverted on the ceiling, or mounted against the base of a machine, and may be operated by a lever, chain or rope, as may be preferred.

Bion J. Arnold has reported to the Public Service Commission of New York City on the ventilation of the subway. Refrigeration and cooling by water are discussed, but are rejected as too expensive. The blocking open of the automatic louvres installed two years ago as a relief measure is recommended, and the building of a center wall between opposite direction tracks, so as to create piston ventilation. The cost of a 4-in. terra cotta division wall extending from Ninety-sixth street to Brooklyn Bridge is put at $76,000, and of a concrete wall at $130,000.

The Carnegie Steel Company, Pittsburgh, will have a complete exhibit of its steel cross ties, steel sheet piling and steel wheels at the convention of the American Street and Interurban Railway Association, to be held at Atlantic City, N. J., from October 12 to 16. The exhibit will occupy spaces 700 to 706, second floor, Marine Hall, Young's Pier.

The fourth annual meeting of the West Virginia Board of Trade of Wheeling, W. Va., will be held at Clarksburg, W. Va., November 10 and 11. Committees appointed at the executive council meeting held in Wheeling, July 27, are now at work on different subjects for consideration.

The Brown Ores of Alabama.—VI.

Their Use in the Blast Furnace.

BY WM. B. PHILLIPS.

Having discussed the geological conditions under which brown ore exists in Alabama, and the chief circumstances which surround its mining and treatment, this article, the closing one in the series, will be devoted to a consideration of the use of brown ore in the blast furnace. Practically all of the charcoal iron made in this State has been made from brown ores, and this amount is about 670,000 tons since 1872. Prior to that time no reliable statistics are available, but it is not improbable that 1,000,000 tons of charcoal iron, worth not less than $30,000,000, has been made in this State from brown ore since pig iron was first made here. A great part of this ore was calcined in open piles, using charcoal "breeze" as fuel, but a portion of it was calcined in a gas fired furnace, as, for instance, at Shelby. The calcination of brown ore not only removes ordinary water, but the combined water as well and renders the ore much more porous, unless the operation has been conducted to the point of sintering. In this case while the water is, of course, entirely removed, the porosity of the ore has been decreased.

Moisture in the Ore.

It is not now the custom in Alabama to calcine the ore at all; it is shipped direct from the mines and used without further treatment. As received and used it may carry as much as 10 per cent. of ordinary water, the general average being 7 per cent. It contains all of its original combined water, and the amount of this present depends upon the percentage of metallic iron. The amount of combined water—*i. e.*, such as is not removed under a red heat—may be as much as 16 per cent., but ordinary brown ore seldom contains, even when pure, more than 14.44 per cent. of combined water. The composition of ordinary brown ore is taken at 85.56 per cent. of oxide of iron and 14.44 per cent. of combined water when entirely pure. This would correspond to 59.89 per cent. of metallic iron. If the combined water were removed we would have a simple oxide of iron containing 70 per cent. of metallic iron.

In commerce, however, we never have so pure a brown ore. It always contains silica, alumina, &c., and the metallic iron in stockhouse ore may be as low as 40 per cent. It is not likely that the brown ore used in Alabama will contain more than 45 per cent. of metallic iron, although some of the better ores will contain as much as 57 per cent. This class of ore, however, is very scarce, and commands always a much better price.

Allowing that the stockhouse ore contains 45 per cent. of metallic iron, 7 per cent. of ordinary water and 7 per cent. of combined water, if we should remove the water entirely the metallic iron would be 52.3 per cent., a gain of 7.3 points. In addition to this advantage, the porosity of the ore and consequent reducibility would be greatly increased. If we allow that 14 per cent. of water, that is of no use to any one, can be removed from brown ore before it goes to the furnace, we find that some one has paid freight on 1,489,922 tons of water since 1890 at a cost of not less than $500,000, or about $30,000 a year for 17 years. If this water were of the least use to any one there might be some explanation of so constant a drain. To the cost of the freight must be added the cost of handling so much dead material at the furnace and the cost of removing the water in the furnace.

Every pound of material that goes into the furnace must either be expelled or melted, and to do either calls for a steady consumption of coke. Without going into any further calculations, it may be said that the cost of the water in brown ore used during the last 17 years in Alabama will approximate $1,000,000, this being inclusive of the freight, the handling in the stockhouse, the consumption of extra coke and the effect upon the furnace walls and the quality of the gas. This charge goes on from year to year without any counterbalancing gain.

Analyses of Red and Brown Ores.

In order to set forth the current furnace practice in Alabama with respect to the raw materials used, two tables have been prepared. These have been rearranged from the tables given by the writer in his "Iron Making in Alabama" in 1896 and 1898. Some brief explanation of the terms used may be necessary before discussing the results given. The hard ore referred to is the limy ore of the Birmingham District. It is the red fossil ore carrying enough lime to flux the silica and alumina. In its best estate it has the following composition:

Composition of Hard Red (Limy) Ore.

	Per cent.		Per cent.
Water	0.50	Alumina	3.18
Metallic iron	37.00	Phosphorus	0.37
Silica	13.44	Sulphur	0.07
Lime	16.20	Carbonic acid	12.24

When the lime is present in sufficient amount to provide only for one half of the silica and alumina the ore is termed "semihard," and when the lime is in considerable excess the ore is termed "extra hard." This ore is mined and used in large quantities, and is to-day the chief dependence of the ironmaster. It is the extension on the dip and under cover of the soft, red ore, the composition of which is as follows:

Composition of Soft Red Ore.

	Per cent.		Per cent.
Water	7.00	Lime	1.12
Metallic iron	47.24	Phosphorus	0.40
Silica	17.20	Sulphur	0.10
Alumina	3.35	Carbonic acid	1.00

This represents a better soft ore than is now being used in the district generally. The composition of a good brown ore may be taken as follows:

Composition of Brown Ore.

	Per cent.		Per cent.
Hygroscopic water	7.00	Alumina	3.61
Combined water	6.00	Lime	0.84
Metallic iron	48.54	Phosphorus	0.38
Silica	11.22	Sulphur	0.09

Much of the brown ore now used is considerably lower in iron and higher in silica and alumina than appears from this analysis. The limestone used carries from 1.50 to 2 per cent. of silica, and the coke will range from 10 to 12.50 per cent. in ash. With these explanations we may proceed to the discussion of the tables:

Table I.—Illustrative of Coke Furnace Practice with Hard (Limy) and Soft Red Ore.—Increasing Percentage of Hard Ore, from 48.2 to 100.—Tons of 2,240 Lb.

No. of charges.	Per ct. of ore burden. Hard ore.	Soft ore.	Per cent. of total burden. Hard ore.	Soft ore.	Limestone.	Coke.	Iron made, tons. Per charge.	Total.	Per cent. f'dry grades.	Consumption, tons, per ton of iron. Ore.	Stone.	Coke.	Total.
2,872	48.2	51.8	24.0	26.3	17.2	32.5	1.45	4,157	83.9	2.26	0.79	1.57	4.62
2,708	50.9	49.1	27.0	26.1	15.6	31.3	1.54	4,155	68.3	2.54	0.77	1.47	4.78
2,870	50.9	49.1	28.1	27.1	15.8	29.0	1.72	4,943	96.2	2.54	0.72	1.32	4.55
2,954	50.9	49.1	27.7	26.7	15.5	30.1	1.66	4,912	99.2	2.39	0.68	1.34	4.41
2,742	51.1	48.9	26.5	25.3	15.8	32.4	1.47	4,037	88.6	2.42	0.73	1.52	4.67
3,029	52.3	47.7	27.2	24.8	16.0	32.0	1.62	4,932	90.2	2.27	0.69	1.39	4.35
3,033	52.3	47.7	26.2	24.1	16.6	33.1	1.49	4,495	87.0	2.32	0.73	1.52	4.57
1,508	65.9	34.1	36.6	19.0	10.3	34.1	1.97	2,970	95.7	2.48	0.45	1.52	4.45
1,343	65.9	34.1	36.4	18.7	10.0	34.9	1.95	2,615	87.8	2.51	0.46	1.60	4.57
1,512	65.9	34.1	36.9	19.1	9.7	34.3	1.92	2,898	93.2	2.57	0.44	1.58	4.59
1,805	80.7	19.3	47.4	11.2	5.7	35.7	1.83	3,315	93.8	2.68	0.26	1.63	4.57
1,995	91.5	8.5	57.3	5.2	2.3	35.2	1.96	3,901	83.9	2.78	0.10	1.56	4.44
1,576	100.0	...	63.8	...	...	36.2	1.91	3,005	59.4	2.87	...	1.63	4.50

This table is based on 29,917 charges, representing 50,335 tons of pig iron.

Furnace Results with Hard and Soft Red Ores.

Table I is illustrative of coke furnace practice with a burden composed of hard and soft ore, the proportion of hard ore rising, as will be seen, from 48.2 to 100 per cent. There were 29,917 charges, and the make of pig iron was 50,335 tons. The amount of ore used per ton of iron varied from 2.26 tons, when the ore burden was composed of 48.2 per cent. of hard and 51.8 per cent. of soft ore, to 2.87 tons when there was no soft ore in the burden. The amount of limestone used per ton of iron made varied from nothing to 0.79 ton. The amount of coke used per ton of iron made varied from 1.32 ton, with an ore burden of about equal parts of hard and soft ore, to 1.63 ton, with an ore burden of 80.7 per cent. hard ore and 19.3 per cent. of soft ore. The lowest consumption of coke, therefore, was 2956.8 lb. per ton of iron and the largest was 3651.2 lb., a difference of 694.4 lb. There are four principal deductions to be made from this table:

1. The amount of ore used per ton of iron made increases with the increasing percentage of hard ore used.

2. The amount of limestone used decreases with the increasing percentage of hard ore. With 50 per cent. of hard ore in the ore burden the consumption of stone was 1545 lb. per ton of iron made; with 66 per cent. of hard ore it was 1008 lb.; with 90 per cent. it was 269 lb., and it was nothing when all hard ore was used.

3. The amount of coke used per ton of iron made increases with the increase in hard ore, varying from 1.32 ton (2956.8 lb.) with 50.9 per cent. of hard ore, 1.52 ton (3404.8 lb.) with 65.9 per cent., and 1.63 ton (3651.2 lb.) with 100 per cent. of hard ore. In the case of one furnace carrying an ore burden of 50.6 per cent. of hard ore, the consumption of coke per ton of iron during a period of three months, was 1.52 tons (3404.8 lb.). But there are cases on record where with a very heavy hard ore burden the consumption of coke did not exceed 2800 lb. per ton of iron. In this table the total amount of coke used in making the 50,335 tons of iron was 75,079 tons, or a consumption of 3337 lb. per ton of iron. On the average and with different proportions of hard ore it is thought that the consumption of coke per ton of iron should not exceed 3300 lb., and the best practice would seem to indicate a consumption of about 2800 lb.

On the average and with increasing proportions of hard ore the consumption of coke is about 300 lb. more per ton of iron than when using increasing proportions of brown ore in a mixed burden.

Results with Red and Brown Ores.

We can now proceed to a brief discussion of a table illustrative of coke furnace practice with a mixture of hard ore, soft ore and brown ore, the proportion of brown ore rising from 1.3 per cent. of the ore burden to 100 per cent. Table II is based on 40,270 charges, representing 66,653 tons of pig iron.

Table II.—Illustrative of Coke Furnace Practice with Hard (Limy) and Soft Red Ore and Brown Ore.—Increasing Percentage of Brown Ore, from 1.3 to 100.—Tons of 2,240 Lb.

	Per cent. of ore burden.			Per cent. of total burden.				Iron made, tons.				Consumption, tons, per ton of iron.		
No. of charges.	Hard ore.	Soft ore.	Brown ore.	Hard ore.	Soft ore.	Brown ore.	Lime-stone.	Coke.	Per charge.	Total.	Per cent. f'dry grades.	Ore.	Stone.	Coke.	Total.
2,687	33.4	65.3	1.3	17.0	33.1	0.6	16.9	32.4	1.69	4,568	95.8	2.22	0.73	1.44	4.39
2,945	47.1	51.5	1.4	24.4	26.7	0.6	16.8	31.5	1.57	4,635	97.9	2.37	0.75	1.45	4.57
2,690	48.5	50.0	1.5	26.5	27.3	0.7	15.9	29.6	1.79	4,818	99.7	2.29	0.64	1.24	4.17
2,962	46.6	50.0	3.4	23.2	24.9	1.6	18.7	31.6	1.69	5,002	97.6	2.11	0.78	1.34	4.23
2,957	48.4	46.8	4.8	25.1	24.3	2.5	16.6	33.5	1.65	4,886	99.5	2.23	0.72	1.37	4.32
2,833	42.4	50.8	6.8	22.1	26.5	3.7	17.1	30.6	1.64	4,659	99.2	2.35	0.77	1.38	4.50
2,847	42.1	50.7	7.2	21.8	26.3	3.7	17.6	30.6	1.63	4,678	94.5	2.34	0.78	1.38	4.50
1,635	57.1	42.5	10.4	31.9	23.8	0.3	10.6	33.4	2.01	3,291	83.1	2.48	0.47	1.48	4.43
1,819	53.7	34.2	12.1	28.5	18.2	6.3	10.6	36.4	1.88	3,418	92.0	2.51	0.49	1.72	4.72
1,712	70.3	9.3	20.4	40.0	5.2	11.6	6.4	36.8	1.88	3,209	86.9	2.55	0.29	1.61	4.45
1,609	58.5	20.4	21.1	32.3	11.2	11.7	8.4	36.4	1.89	3,011	90.0	2.50	0.44	1.52	4.49
1,994	53.7	19.2	27.1	29.9	10.7	15.1	9.7	34.6	2.01	3,990	89.2	2.40	0.41	1.49	4.30
1,904	17.3	35.1	47.6	8.9	18.2	24.6	19.2	29.1	1.34	2,569	92.8	2.37	0.88	1.32	4.57
1,900	18.3	33.3	48.4	10.0	17.6	25.3	18.6	28.5	1.29	2,456	99.9	2.45	0.87	1.35	4.68
1,983	21.0	28.1	50.9	10.5	14.0	25.3	20.0	30.2	1.37	2,708	99.2	2.16	0.86	1.31	4.33
1,909	23.8	24.8	51.4	12.4	13.0	26.8	18.2	29.6	1.23	2,369	92.1	2.50	0.87	1.41	4.78
2,076	16.0	17.7	66.3	8.8	9.8	36.7	18.1	26.6	1.37	2,844	98.1	2.68	0.88	1.28	4.84
1,802	...	...	100.0	...	...	52.9	20.4	26.7	1.53	2,766	99.1	2.31	0.89	1.16	4.36

This table is based on 40,270 charges, representing 66,653 tons of pig iron.

An examination of Table II will show:

1. The consumption of ore per ton of iron varies from 2.11 tons, when using a burden composed of 46.6 per cent. of hard ore, 50 per cent. of soft ore and 3.4 per cent. of brown ore, to 2.68 tons when using an ore burden of 16 per cent. hard, 17.7 per cent. soft and 66.3 per cent. of brown ore. The higher results would indicate a poor quality of brown ore.

2. The consumption of limestone varies from 0.29 ton (649.6 lb.) with an ore burden of 70.3 per cent. hard, 9.3 per cent. soft and 20.4 per cent. brown ore, to 0.89 ton (1997.6 lb.) with 100 per cent. of brown ore.

3. The consumption of coke per ton of iron varies from 1.72 ton (3852.8 lb.) with an ore burden of 53.7 per cent. hard, 34.2 per cent. soft and 12.1 per cent. of brown ore, to 1.16 ton (2598.4 lb.) with 100 per cent. of brown ore. The variation in coke consumption is thus 1254.4 lb. Up to 10.4 per cent. of brown ore in the ore burden the average consumption of coke per ton of iron was 3068.8 lb., the make of iron being 33,246 tons. From 10.4 to 47.6 per cent. of brown ore the consumption of coke was 3427.2 lb., the make of iron being 19,688 tons. From 48.4 per cent. of brown ore to 100 per cent. of brown ore the consumption of coke was 2912 lb., the make of iron being 13,719 tons. We have, then, three groups, in the first and third of which the consumption of coke per ton of iron is about 3000 lb. (3068.8 and 2912 lb.), and in the other 3427.2 lb. But there are two cases in the middle group in which the consumption of coke is abnormally high (3852.8 and 3606.4 lb.). If these be excluded the consumption of coke in the middle group falls to 3248 lb., and the average of the three groups becomes 3076.3 lb. of coke per ton of iron.

Economy of Larger Percentages of Brown Ore.

It may be concluded that with different proportions of brown ore in a mixed burden the consumption of coke should not exceed 3000 lb. per ton of iron, and with the best practice may be a good deal less. The marked tendency of the third group, in which the proportion of brown ore rises from 47.6 to 100 per cent. toward a lower coke consumption than either of the other two groups, would seem to indicate that brown ore should comprise not less than 50 per cent. of the ore burden. This would mean that the production of brown ore would have to be more than doubled in order to meet the demand, allowing that the quality remains the same. It would also mean a very large saving in coke. Taking this saving at 300 lb. per ton of iron made, it would amount to nearly $250,000 on the coke iron output of Alabama in 1907. If the brown ore should be calcined the saving would be a good deal larger, perhaps as much as $300,000 a year.

Summary.

In view of what has been said in these articles, it appears that there are three things to be recommended in the brown ore industry:

1. The thorough exploitation of the deposits.

2. The treatment of the ore in a modern and up to date concentration plant, including the crushing, washing and jigging of the ore.

3. The calcination of the ore before it is shipped from the mines. These call for additional capital and additional skilled labor. The benefits would be beyond question of great advantage to the iron industry.

(THE END.)

A Crank Shaft Cold Saw Cutting-Off Machine.

A crank shaft cold saw cutting-off machine of special design was recently furnished to the Erie Forge Company, Erie, Pa., by the Newton Machine Tool Works, Inc., Philadelphia. As the illustrations show, it carries two 28-in. inserted tooth saw blades, which are mounted on an extension spindle 8 in. in diameter, and are fitted with spacing washers giving any desired width of throat from ½ to 12 in., in variations of ⅛ in. A novel feature of the machine is the arrangement of the vises or V-blocks for holding the work. Three of these are shown, each 17 in. wide and 35 in. long, with a capacity in the V's, which obtained from the motor shaft, are independent of each other. This permits of withdrawing the saw blades when not in motion, a desirable feature, as many times the unequal strain developing after removal of metal causes the work to close on the saw blade. In that case the rotation of the blade would result in the breakage of a number of teeth, while withdrawing when not in motion would simply mean pulling them from the sockets.

All the movements in the operation of the machine are controlled from one point. The lever A', Fig. 1, controls the variation of feed, which ranges from 0.35 to 2 in. per minute. The levers B operate the feed drive and automatic release, while lever C is connected with

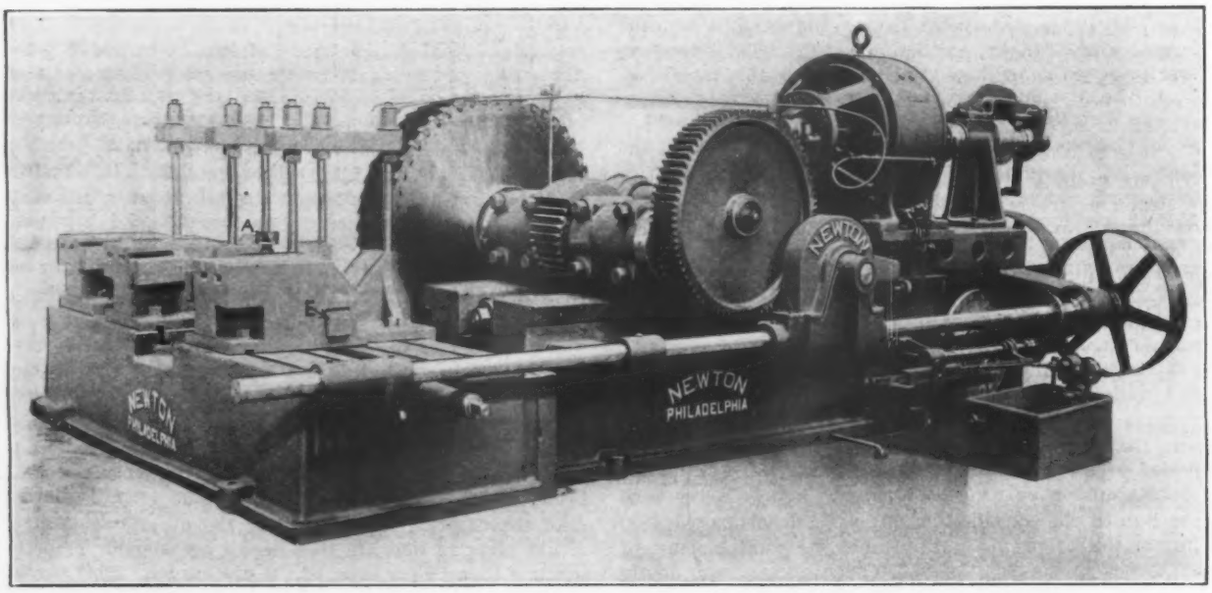


Fig. 1.—A Special Crank Shaft Cold Saw Cutting-Off Machine Built by the Newton Machine Tool Works, Philadelphia, Pa.

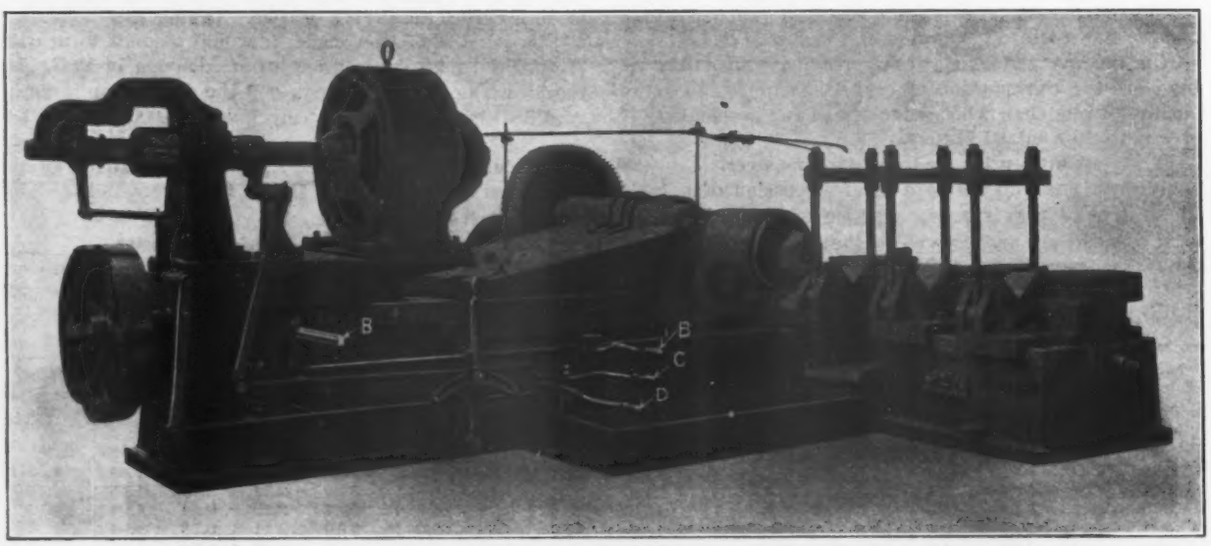


Fig 2.—Opposite Side of the Machine, Showing the Controlling Levers.

are faced with tool steel plates, up to 15 in. in diameter. The work is held by means of strap clamps, which are open at one end. The clamping bolts are hinged to permit of clearance when changing the work. In addition to the V-block, there is also a surface fitted with T-slots for clamping the crank shafts, supported below by the jack A, shown in Fig. 1, which has a bearing in the yoke bar E, fitted through the V-blocks. This jack screw has a ball and socket fit with the contact piece, which permits a solid bearing under angular work. The drive is through intermediate and worm gearing (a steep lead worm of bronze and a worm wheel of hardened steel, both running in oil) by belt from the armature shaft, as shown in Fig. 2. The drive and quick traverse, while the driving pulley and lever D with the quick return. The manufacturer supplies with this machine a scale, shown on the side of the saddle in Fig. 1, which gives the depth of cut. The machine is supplied with pump and piping for the lubrication arrangement illustrated in Fig. 2.

The following companies have recently signed the puddling scale of the Sons of Vulcan, composed of puddlers in the Pittsburgh District: Pittsburgh Forge & Iron Company, Wayne Iron & Steel Company, Colonial Steel Company, Zug Iron & Steel Company, Crucible Steel Company of America, Lockhart Iron & Steel Company, and A. M. Byers & Co., Inc.

The New Cincinnati Lathe Feed.

A new positive geared feed is now being supplied on the lathe made by the Cincinnati Lathe & Tool Company, Cincinnati, Ohio. Fig. 1 shows a 16-in. engine lathe with three-step cone and double gears, equipped with the new positive feeding device, and No. 2 is a diagram showing a development of the mechanism laid out in a common plane. This new lathe is an addition to the company's line, for it will continue to manufacture its change gear lathe for cutting screws which gives 40 changes without removing a gear. These lathes have been on the market for some years, and are suitable for any variety of work, light or heavy, and are claimed to be of high efficiency with regard to quality and quantity of output, and time and expense of producing it. In both lathes all shafts are made of high grade machinery steel, turned and ground, and all plain bearings are scraped to surface plates.

The double back geared lathes, with extra wide three-step cone pulleys, of which the illustration, Fig. 1, shows an example, are equipped with steel cone pinions and steel back gear quills, both ends of each of which are bushed with bronze. All gears are made of bar steel, and those working on loose shafts are bushed with bronze. The strength of all parts is such that the machine will take any cut which the main driving belt will pull.

With the new gear device six feeds can be obtained, ranging from 16 to 100 per inch, and all simply by moving the lever G, Fig. 1. The device is simple in construction, consisting of only two parts, the lever mentioned and the gear box on the bed. The feeds are independent, therefore may be operated without having the lead screw continually in action.

Referring to Fig. 2 the operation will be understood from the following: The drive from the spindle is taken through gears to the shaft *m*, to which is keyed the bevel gear *a*. The latter drives the pinion *b*, and through it the shaft *r* and worm *c*. These parts are supported by the bracket *g* swinging on the shaft *m*, so as to allow *g* to move up and down. When either of the gears *i* or *h* are engaged with their corresponding gears *j* or *k* on the feed rod, the feeding device gives the six changes instantly. These are sufficient for a 16-in. lathe used for general manufacturing. Twenty-two additional feed changes can be obtained, however, ranging from 5 to 64 per inch, by the sliding gear *w* on the lead screw when it is in mesh with the gear *o* on the feed rod. The four pitch steel lead screw cuts threads 2 to 24 per inch, including 11½. An unlimited range of feeds may be secured by ordering extra change gears for screw cutting.

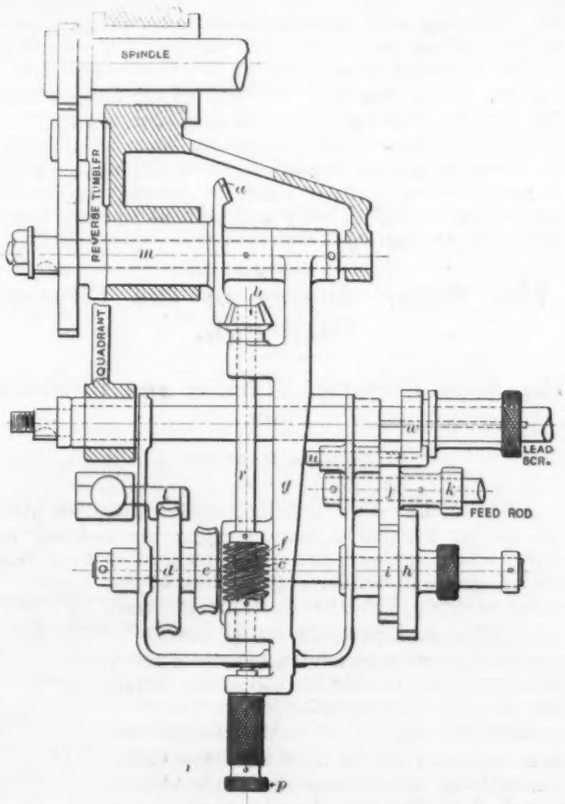


Fig. 2.—Development of the Gears in the Positive Feed Drive.

The safety stop *u* prevents both feeds from being engaged at the same time. By placing the pin *p* in holes in the gear casing the worm *c* is retained in mesh with any one of the worm gears *g*, *e* and *f* (the latter is not clearly shown in Fig. 2, but is located just underneath the worm *c*). From the different sizes of these three worm wheels three different rates of feed are obtained. The fork *t* is used to shift the worm wheels into engagement with the worm *c*. The reservoir beneath these gears contains oil into which they dip so that they are kept constantly lubricated.

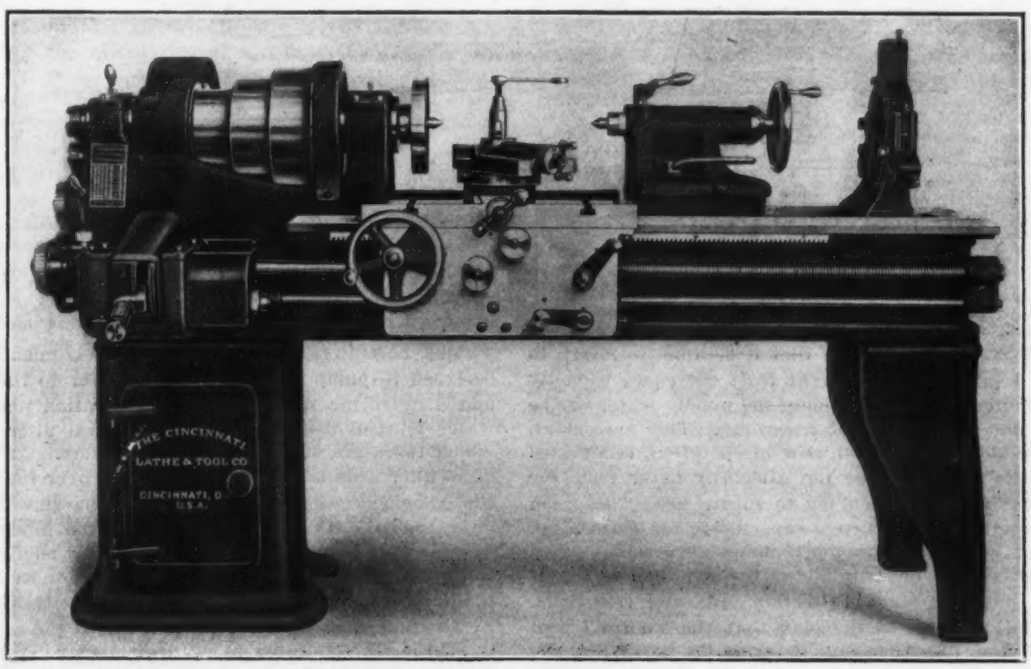


Fig. 1.—A 16-In. Engine Lathe with the New Positive Feed. Built by the Cincinnati Lathe & Tool Company, Cincinnati, Ohio.

Each lathe is furnished with a plain or compound rest, with center and follow rest, large and small face plates, the necessary wrenches, and a self-oiling friction countershaft. A taper attachment may be furnished to be added to the lathe at any time. This travels with the carriage and permits turning tapers up to 4 in. to the foot and 12 in. long at one setting. The machines are

also furnished with draw-in attachments, oil pan, turret on the carriage, and with either three or five step cones.

The principal dimensions of the 16-in. lathe are as follows: Swing over bed, 16½ in.; swing over carriage, 10¼ in.; width of belt on a three-step cone, 3¼ in.; ratio of the back gears, with a three-step cone, 3 1-3 and 9½ to 1; taper spindle socket, No. 4 Morse taper; length of bed, 6, 8, 10, or 12 ft.; hole in spindle, 1¼ in.; distance between centers on a 6-ft. bed, 34 in.; net weight of 6-ft. lathe, 2000 lb.

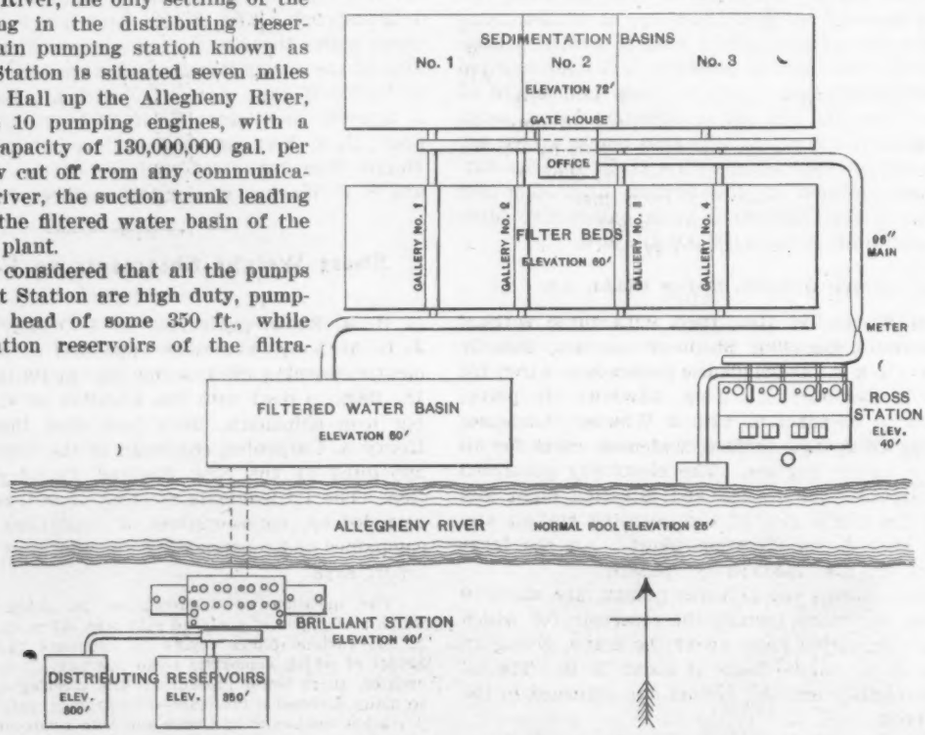
The Water Supply of the City of Pittsburgh.

The Main Pumping Stations and Filtration Plant.

BY H. G. MANNING.

Prior to the recent installation of a filtration plant, the city of Pittsburgh, not including the annexed districts, was supplied with water pumped directly from the Allegheny River, the only settling of the water occurring in the distributing reservoirs. The main pumping station known as the Brilliant Station is situated seven miles from the City Hall up the Allegheny River, and all of its 10 pumping engines, with a total normal capacity of 130,000,000 gal. per 24 hr., are now cut off from any communication with the river, the suction trunk leading directly from the filtered water basin of the new filtration plant.

When it is considered that all the pumps in the Brilliant Station are high duty, pumping against a head of some 350 ft., while the sedimentation reservoirs of the filtration plant are only 50 ft. above the ordinary hight of the river, it will be seen that it became necessary to provide a pumping plant of at least the equal capacity of the Brilliant Station to pump the muddy water of the river to the filtration plant reservoirs. This new plant, known as the Ross Station, now in operation, is situated half a mile up and across the Allegheny River from the Brilliant Station, and looking to future needs, has been installed with a total normal capacity of 140,000,000 gal. per 24 hr., with space for more pumps as needed.



Main Pumping Stations and Filtration Plant of the City of Pittsburgh, Pa.

The accompanying plan shows the general location of the two pumping plants, filtration beds and reservoirs. It will be observed in the plan that the "normal pool elevation" of the Allegheny River is 25 ft. When the water is at this stage in the river, the elevation of the filtered water basin is only 25 ft. above it. The elevation figures given in the plan are "above datum," or when the water is out of the dam in the river.

The Brilliant Station.

The equipment of the Brilliant Station consists of 10 vertical cross compound condensing engines, weighing from 600 to 800 tons each, with a total of approximately 7000 tons of working machinery under one roof and in one room.

With the late addition of two 15,000,000 gal. engines, included in the 10 above mentioned, the Brilliant Station has clinched its position at the head of high duty pumping stations of the world, a place which it has held for a number of years. This means that there is no single station in any city of the world which has the capacity under the high pumping head which this station has. To perform this work there are required 37 boilers of different types, including both fire and water tube, the majority of which have mechanical stokers. A total operating force of 90 men is used in three shifts of 8 hr. each.

The following table gives the principal data of the several engines, all being vertical cross compound condensing, as above stated:

No.	Cylinders.	Plungers.	Builders.
1.	42 and 84 x 56 in.	21-in. double acting.	Holley.
2.	42 and 84 x 56 in.	21-in. doubt acting.	Allis-Chalmers.
3.	50 and 92 x 64 in.	22½-in. single acting.	Allis-Chalmers.
4.	50 and 92 x 64 in.	22½-in. single acting.	Allis-Chalmers.
5.	50 and 92 x 64 in.	22½-in. single acting.	Allis-Chalmers.
6.	50 and 92 x 64 in.	22½-in. single acting.	Allis-Chalmers.
7.	48 and 92 x 64 in.	36-in. single acting.	Allis-Chalmers.
8.	48 and 92 x 64 in.	36-in. single acting.	Allis-Chalmers.
9.	50 and 96 x 64 in.	36-in. single acting.	Allis-Chalmers.
10.	50 and 96 x 64 in.	36-in. single acting.	Allis-Chalmers.

The New Ross Station.

The new Ross Station, as previously mentioned, is designed to pump directly from the river to the settling and distributing reservoirs of the filtration plant. The water is then distributed to the several filter beds, of which there are 46, each covering an acre. An addition of 10 filter beds is soon to be made to cover the needs of the Allegheny section of Greater Pittsburgh. From the filter beds the filtered water flows to the filtered water basin and from there goes through the suction trunk running under the river bed to the suction wells of the Brilliant Station, to be pumped into the city mains.

The pumps at the Ross Station are of the centrifugal type, directly connected to vertical cross compound condensing Allis-Chalmers engines, having Corliss valve gear. The speed of the pumps is 115 rev. per min., and they were designed for a normal capacity of 35,000,000 gal. per day, under a total head of 46 ft. There are four of these pumps and engines, each having cylinders 16 and 34 in. diameter by 36 in. stroke, with a pump impeller 12 ft. in diameter. These centrifugal pumps are the largest that have been built for direct connection to an engine shaft up to the present time. Each pump is connected to a Wheeler Condenser & Engineering Company's surface condenser, with circulating water flowing around the tubes. The circulating water is supplied either from

the main suction trunk by an auxiliary motor driven centrifugal pump, or directly from the filtration reservoir as desired. A triplex Edwards air pump is directly connected to the main engine shaft, delivering the water of condensation to a hot well from which the boiler feed is taken, the feed water being forced through sand and gravel filters on its way to the boiler. The following table gives the principal data of the engines in this station:

No.	Type.	Cylinders.	Plungers.	Builders.
1.	Vertical cross compound condensing	16 and 34 x 36	12-ft. impellor	Allis-Chalmers.
2.	Vertical cross compound condensing	16 and 34 x 36	12-ft. impellor	Allis-Chalmers.
3.	Vertical cross compound condensing	16 and 34 x 36	12-ft. impellor	Allis-Chalmers.
4.	Vertical cross compound condensing	16 and 34 x 36	12-ft. impellor	Allis-Chalmers.
6.	Horizontal duplex tandem compound condensing	12 and 24 x 24	14-in. double acting	D'Auria Builders Iron Foundry Company.
7.	Horizontal duplex tandem compound condensing	12 and 24 x 24	14-in. double acting	D'Auria Builders Iron Foundry Company.
8.	Horizontal duplex tandem compound condensing	10 and 20 x 18	11-in. double acting.	
10.	Vertical cross compound condensing	14 and 27 x 14		Shepherd Eng'g. Co.
11.	Vertical cross compound condensing	14 and 27 x 14		
12.	Vertical cross compound condensing	14 and 27 x 14		

For washing the sand of the filter beds, the Ross Station is equipped with three D'Auria duplex tandem compound condensing plunger pumps with a discharge pressure of 100 lb. and suction pressure of 10 lb. received from the filtration plant. Two of these pumps are of 5,000,000 gal. capacity and one is 3,000,000. Each large pump is fitted with a triplex Edwards motor driven air pump operating in conjunction with a C. H. Wheeler surface condenser located in the suction line. The air pumps of one of the 5,000,000 D'Auria pumps also cares for the condensation of the 3,000,000 D'Auria.

The Electric System, Boiler Plant, &c.

The Ross Station is also fitted with three vertical cross compound condensing Shepherd engines, directly connected to 175 k.w. Westinghouse generators, wired for the three-wire system. A triplex Edwards air pump, motor driven, in conjunction with a Wheeler Condenser & Engineering Company's surface condenser, cares for all three electric power engines. The electricity generated is used for lighting the station and filtration plant and for driving the auxiliaries of the pumping station and the motors around the filtration plant. All the large water valves are also electrically operated.

All engines, except the D'Auria pumps, are supplied with oil from a gravity system, the reservoir for which is located in the engine room above the crane, giving an oil pressure on all engine feeds of about 25 lb. The oil is filtered through a Star oil system and returned to the supply reservoir.

The boiler room is fitted with eight 350 hp. Babcock & Wilcox boilers, built by the Sterling Consolidated Boiler Company. They are laid out in two banks of two batteries, with a green fuel economizer for each bank. Steam is carried at 150 lb. pressure.

Coal is delivered by rail into a hopper beneath the tracks, the outlet of the hopper being 15 ft. below the boiler room floor. The coal runs from this hopper into a two ton bucket, and is hoisted to the coal bunkers above the boiler, thence carried to any boiler, dumped and returned to the starting point automatically. This apparatus was supplied by the Sprague Electric Company.

The coal bunkers are divided into bins covering one battery of two boilers, with a capacity of 200 tons, or a total storage capacity of 800 tons. The Babcock & Wilcox type of chain grate is used, the coal dropping from the bunker through automatic weighing hoppers into chutes conducting the coal to the grate hoppers. The ashes drop from the grates into hoppers beneath the floor, an ash tunnel connecting them all. The ashes are removed by water pressure driving them into an open space alongside the station, and are used for filling purposes.

A total operating force of 40 men is required at the Ross Station, divided into three shifts of 8 hr. each.

The station is also supplied with one 10 ton electric crane, and one each of the following machine tools, electrically operated: 12 in. speed lathe, 24 in. shaper, 12 in. x 8 ft. engine lathe, 24 in. x 10 ft. engine lathe, 24 in. drill press, 18 in. emery grinder, twist drill grinder, grindstone, pipe threading machine.

An H. K. Porter & Co. air locomotive, supplied with compressed air by a Clayton air compressor, is used for shifting coal cars from the railroad siding to the coal siding.

The Ross Station is a beautifully designed building inside and out, fitted with the most modern machinery suitable for the work in hand, and is a credit to the city of Pittsburgh. The work of this station has been executed under the direction of A. B. Shepherd, superintendent of the Water Bureau, and at present acting Director of Public Works. Associated with him have been Rutan & Russell, architects; F. H. Robbins, mechanical engineer; H. E. Fernald, chief engineer of the two stations; Morris Knowles, chief engineer of the filtration plant, and S. B. Waring, mechanical engineer for the city.

Short Weight Shipments to Foundries.

B. M. Shaw, chairman; A. A. Miller, secretary, and J. L. Anthony, who were appointed to prepare a statement concerning the meeting held in Philadelphia, March 18, 1908, to deal with the question of short weights in pig iron shipments, have just filed their report with Henry A. Carpenter, chairman of the original committee, appointed by the New England Foundrymen's Association. The Philadelphia meeting, it will be recalled, was attended by representatives of consignors, transportation companies and consignees of pig iron, coal and coke. The report says:

The question of discrepancies in shipping and outturn weights of pig iron, coal and coke was taken up. The discussion of the various topics covers an extensive range, stenographic report of which comprises some 104 pages. Under the circumstances, there being present at this meeting representatives of so many diversified interests—foundrymen, rail and water transportation companies and coke and iron producers—it was impossible to pass any formal resolutions harmonizing the views of all present regarding the outcome of the day's discussion.

In a general way, however, it may be said that an understanding was in a measure arrived at with some of the transportation interests and shippers, particularly regarding coke, whereby methods of check weighing might be employed to meet the railroads' requirements to establish losses of material in transit, and also to establish the correctness or incorrectness of the marked tare weight on cars. The representatives of transportation interests declared that, to obtain a check weight establishing a loss of coke in transit it would be necessary for the consignee to use the same methods in weighing at delivery point as at the shipping point. Cars must be weighed on railroad track scales by representatives of the railroad company and the marked tare used as the light weight of the car. Errors in marked tare may be arrived at by the same method of weighing, after the car has been cleaned out to the satisfaction of the railroad company's representative. A number of the representatives of the transportation companies expressed a willingness to allow for shortages, if established to their satisfaction by approved methods, and after such allowances had been made by the railroads, the shippers (where railroad weights govern the shipment) expressed a willingness to reimburse the consignee for shortages in material delivered.

As far as overcoming discrepancies in the short weight of pig iron is concerned, little of particular interest was accomplished. The discrepancies in all-rail shipments did not appear to be very extensive, and when such did occur there seemed to be little difficulty in making an adequate adjustment. In rail and water shipments, however, it was impossible to obtain from the representative of this interest any definite statement which would lead to the solution of the difficulty in shipments of that class.

It was decided that the stenographic report be edited and printed, and your committee, therefore, takes pleasure in forwarding to you as a part of its report a copy of the proceedings.

The Reagan Device for Mechanical Stoking.

A new device for mechanically stoking bituminous fires under boilers has recently been patented and placed before the trade by the Reagan Grate Bar Company, 209 North Front street, Philadelphia, Pa. It is designed to obviate the use of the stoker bar in slicing the fire, and to permit the fire to be uniformly stoked without opening the fire door, thus eliminating the greatest hardship on the fireman and also resulting in a considerable saving of labor. With this device the fire can be kept in a porous condition at all times, its movement being such as will break up clinkers in their infancy and thereby induce a continuous supply of air through the fire, and result in the perfect combustion of the fuel. Under ordinary conditions, when the fire door of a boiler is opened to permit of hand stoking with a bar, a large inrush of cold air passes over the fire, retarding combustion, producing smoke and also reducing the temperature of the boiler.

The construction of the device is quite simple, but its use is confined, by the design, to grates of the Reagan type. It consists principally of a series of lifting fire bars, as shown in Fig. 1, extending throughout the length of the grate, which vary in size according to the size of the grate. In a 6-ft. grate the lifting grates are in a series of three, which, according to the width of the grate, are spaced 18 in. apart. They are about 18 in. long and 6 in. wide, the back of the bars being solid, except for openings left to permit access of air to the fire, so that in raising the bars no part of the fire body is permitted to drop through into the ash pit. Each lifting grate is hinged at one end, the bottom of the grates being connected by means of a continuous rod, which is attached to the operating levers at the front of the firebox, the raising operation being performed by a removable hand lever. Each series of grates is operated at one movement of the lever, Fig. 2, raising the lifting grates to a maximum hight of 11 in. above the grate surface, of which they form a part when not in action, and like other portions of the grate are thoroughly air cooled.

Fig. 1.—The Reagan Device for Mechanical Stoking, Made by the Reagan Grate Bar Company, Philadelphia, Pa.

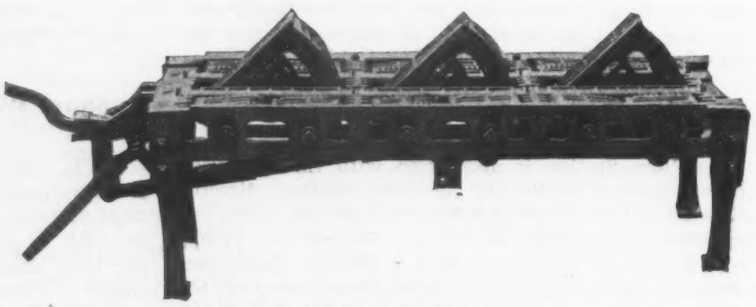


Fig. 2.—The Stoking Device in Action.

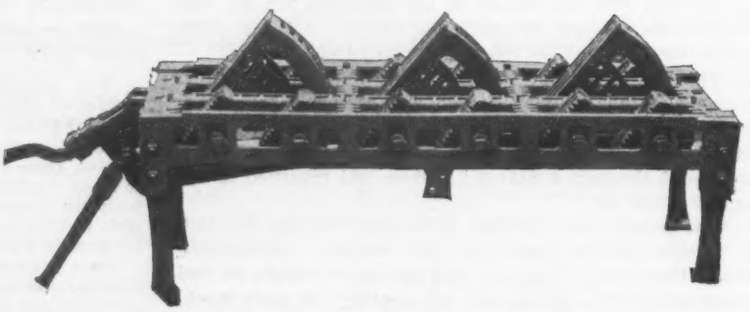


Fig. 3.—The Stoking Device and Choppers in Action.

A complete breaking up of the fire body is insured by the operation of these lifting grates, while the clinkers and ash, falling to the right and left, drop within the range of the chopping device, attached to the grate. The chopping device or grates, the operation of which is shown more particularly in Fig. 3, consist of a series of hinged grates 12 in. long and 6 in. wide, the rotary movement of which is at the center. These run throughout the length of the grate and on each side of the lifting grate, and when not in service form a part of the grate proper. They are operated by a rod and lever movement of the same type as that used for the lifting grates, and can be operated either independently or together with the lifting grates. The function of the chopping grates is to clean the fire. The upward movement extends several inches above the grate surface, and, when raised, provides openings through which the ash and disintegrated clinker can drop through to the ash pit. The Reagan mechanical stoking device can be attached to any size of the Reagan grate, which has been before the trade for a number of years. The manufacturer claims that with its use the evaporation of 25 per cent. more water than by the usual methods of firing and stoking can be obtained.

The Tariff in the Canadian Election.

The tariff is one of the issues in the Parliamentary campaign which is going on in Canada in view of the general election in October. The Laurier Government is seeking to justify the numerous tariff enactments and orders-in-council which have come into force since 1897, practically all for the extension of the national policy, originated by the Conservatives in 1879, and for the exclusion of imports. The Conservatives, who are now in opposition, are making the attack, and they are committed by their utterances in Parliament to a tariff that would still further restrict imports from the United States and would deny to British imports into Canada any of the preference conceded by the Liberals since 1897, until Great Britain goes on a protective basis and establishes a preference at the customs houses for imports from Canada.

It was by the Parliament elected in 1904, and that will come to an end this autumn, that the tariff of 1897 was revised and the bounty system overhauled and extended. The Conservatives at no time offered any opposition to the higher duties enacted in the tariff that was before the House of Commons in the winter of 1906-1907. Nor did they offer the least objection to the renewal of the bounty laws—a renewal which is to-day costing the Dominion at the rate of $2,800,000 a year. All this legislation was welcomed by the Conservatives as an indorsement and extension of the national policy which they inaugurated nearly 30 years ago. The complaint on which they laid most emphasis was that duties were not high enough to give the Canadian manufacturers absolute control of the trade of the Dominion, and that it was needless generosity to concede preferences to British manufacturers until Great Britain should make concessions to Canadian exporters.

Since the tariff was revised the Conservatives have given their support to all the pleas of manufacturers who have urged that the revision of 1906-1907 left them with inadequate protection. On this policy they will go into the elections in Eastern Canada, in the urban centers where industries are congregated. For the West there must be a variation in their programme, for, as was made plain when the Tariff Commission was in Western Ontario, Manitoba, Saskatchewan and Alberta, in the autumn of 1905, farmers and stockmen are almost unanimously, without regard to political affiliations, opposed to higher duties on imports. In particular they are opposed to any increase in the tariff on farm machinery, builders' hardware and stoves. They were so resolute in their opposition to any further concessions to Canadian manufacturers in these lines of industry, and they made their opposition so obvious to the Tariff Commission, that the Government, when it revised the tariff, reduced by 2½ or 5 per cent. the duties on farm implements, compensating the manufacturers by reducing the duty on their raw materials.

The country that lies beyond North Bay is extremely delicate ground for either Liberal or Conservative Parliamentary candidates when they begin to talk tariff and national policy. At this election the Conservatives will have to walk warily in managing their electoral campaign in the prairie provinces, where there is little manufacuring on a large scale. Unusual caution on the tariff will be necessary because the Conservatives are relying on the scandals exposed at Ottawa since 1905 to secure such a popular vote all over the Dominion as will result in their return to power after 12 years of opposition in the Dominion Parliament.

The most serious of these scandals, certainly of those for which there is a good basis of fact, arise out of the particular care that the Government has shown for its friends when equipment and supplies for the various departments were purchased. But almost equal stress is being laid on the revelations as to the financing of the Quebec Bridge Company, and the circumstances under which the Government gave it a subsidy of $1,000,000 and guaranteed its bonds to the extent of $7,000,000. New Brunswick and Ontario have in the present year returned Conservative provincial governments to power with tremendous majorities. In the Quebec provincial elections the Liberals also suffered considerable loss in Parliamentary strength, and the popular tide has gone so far against them that to-day Nova Scotia, Prince Edward Island, Quebec, Saskachewan and Alberta—all small except Quebec—are the only provinces in which Liberals remain in control of the Government.

It is because there is a likelihood that the Conservatives may be returned to power this autumn that the Parliamentary utterances of Mr. Borden and Mr. Foster, the Conservative leaders in the House of Commons, on the tariff since 1897, are of significance to all American manufacturers who do any considerable business with the Dominion. If the Laurier Government comes back to power, it will be safe to assume that the tariff as it has stood since November, 1906, will remain much as is is for three or four years to come, and that all existing bounty legislation will be renewed as the several laws expire. On the other hand, if the Conservatives carry the elections, and a government with Mr. Borden as Premier succeeds the present administration, the Conservatives are committed to a revision of the tariff—a revision in which all the protective duties will be greatly increased.

P.

Proposed Drainage and Power Canal at Buffalo.

The Erie & Ontario Sanitary Canal Company has been incorporated at Buffalo to build a $20,000,000 drainage and power canal from Lake Erie at South Buffalo to Lake Ontario, providing the Federal Government consents to the diversion of the necessary water from Lake Erie, which is estimated at 6000 cu. ft. per second. The canal is to be 38 miles in length, 100 ft. wide and 20 ft. deep. It is proposed to circle around Buffalo to the east and connect with the Erie Barge Canal, so that canal barges may also navigate the sanitary canal, as dockage and manufacturing sites will be provided along its course for factories, which will utilize the electric power to be developed at Lockport. The fall between Lake Erie and Lake Ontario is 326 ft.

Buffalo River, Smoke's Creek and Ellicott Creek, in the engineer's plan, will have their currents reversed and flow into the sanitary canal instead of into Lake Erie and Niagara River. Besides the development of power, the canal will dispose of the sewage of Buffalo, South Buffalo, West Seneca and the towns along its course, and thus remove the danger of sewage pollution of the water supply of Buffalo and the cities of Tonawanda and Niagara Falls. It would also abate the spring floods and freshets to which Buffalo River is now subject. The plan provides that the railroads entering Buffalo will not be interfered with, as the canal will pass under them by a tunnel four miles long, having its northerly entrance at Williamsville.

The company back of the proposition is now capitalized at $100,000. Millard F. Bowen, formerly secretary of the Manufacturers' Club, who is the originator of the project, states that eminent engineers have indorsed the canal plan as practicable and that plenty of capital will be available for construction work as soon as the War Department consents to the use of the necessary flow of water from Lake Erie, and the Public Service Commission passes on the electrical development feature.

Pennsylvania Corporation Laws.

HARRISBURG, PA., August 31, 1908.—Some important changes in the laws relative to Pennsylvania's corporation taxation are now being discussed in advance of the meeting of the Legislature, which will assemble on the first Monday of January in biennial session, especially relative to taxation of manufacturing companies and the periods in which corporations must make their reports to the Auditor-General for settlement of taxes.

At the last session of the Legislature a bill for the taxation of capital stock of manufacturing companies—iron, steel, glass, cement and the like—was seriously considered, and it is not improbable in view of the heavy demands which will be made for appropriations for road construction and other public works next session that a similar bill will be heard of. The proposition made at that time was 5 mills on the dollar. The manufacturing corporations at present pay no tax on capital stock which is actually engaged in manufacturing, but are required to pay a tax on loans and gross receipts.

Another change, which has received hearty support from all parts of the State, is a proposed amendment to the act of 1811 creating the office of Auditor-General, which requires all corporations to make reports to the official showing business for the fiscal year ending the first Monday of November. This was an ancient requirement, devised so that the Auditor-General could inform the Legislature of the probable revenue when it met in January. At present there are over 22,000 corporations reporting to the department, and, as the bulk of them are run on a calandar year basis, the old statute provision works a hardship on the companies, and piles up so much work that the Auditor-General's force cannot settle the taxes for months. It is planned to secure uniformity in the time of reports by making the calendar year the period.

The State fiscal authorities are preparing for a test of the question whether a lien for State taxes is a preferred claim in one of the courts of the Commonwealth. It is a question which has been ruled upon various ways and one of vital interest to corporations. Under authority of acts of 1829 and 1889 the Auditor-General's Department, which has charge of the collection of all taxes for the State, has been insisting that State taxes should have priority in settlements, and has enforced the statute which permits the State to file claim for interest if a State tax is not settled within 30 days after settlement is made by the Auditor-General. This has been resisted by some corporations, and an action will now be brought to determine the matter once for all.

Foundry Warehouse Methods.*

BY F. C. EVERITT, TRENTON, N. J.

With a few exceptions, probably no subject under the general head of "System" involves wider variations, due to local conditions of plant and line of goods manufactured, than "Foundry Warehouse Methods." To present any one method that might be generally used for the profitable handling of goods and that the majority of manufacturers would not object to if applied to their particular case would be impossible. It is true that local conditions can be changed to conform with a given method; but this is not always advisable, as it might involve a greater expense and more confusion than could be overcome in a long time, whereas a few changes in the method would give entire satisfaction with little expense.

In submitting the method here detailed we confine ourselves to those plants which conduct a warehouse in connection with a foundry and mounting or finishing departments. For convenience we will consider a plant operating a foundry, a mounting or finishing department and a warehouse. We will assume also that the plant has been in operation for a given period. This will provide us with some knowledge of the demand for the different articles manufactured. We may then decide what points are most important for careful consideration before applying our method. Taking these in order we have:

(a) Method of storing the finished stock in the warehouse. Its location and records.

(b) Method of ordering completed goods for warehouse stock.

(c) Means of ascertaining quantities sold in the past in order to judge what quantities to order for stock, preventing an overstock and guarding against the article becoming obsolete before stock is exhausted.

(d) Method of handling orders for shipment which might be held for shipping instructions. Location of these prepared orders.

(e) The storage and handling of castings before mounting and the method of ordering on the foundry.

* A paper read at the Toronto, Can., convention of the American Foundrymen's Association, June, 1908.

Stock in Store.

(a) With the first item it will be necessary, according to the construction of the warehouse, carefully and systematically to arrange the different floors into sections or bins as the case may suggest, the floors, sections and bins being numbered in the order named, *i. e.*, floor No. 1, section 25, bin 50. We can then very readily refer to the location in a simple manner (location 1, 25, 50). This is a very simple scheme and one undoubtedly used by many manufacturers. With this part of our plan established we may prepare the warehouse office "Stock and Order Book," a sample sheet of which is shown in Fig. 1. On these sheets, bound in loose leaf binders, we will enter the name of the article and its size, maximum and minimum quantities to be carried in stock and its location. (One sheet or page to be used for a single article). As the orders are received in the general office and recorded, copies are sent to the warehouse office and entered immediately on the "Stock and Order Book" in the columns under the heading "Orders." The stock on hand having been previously entered in the "Stock" column, we readily note that we have 300 on hand and can ship at once. A warehouse memorandum slip, bearing the order number, customer's name, article and its location, is handed to the man in charge of the stock to prepare the goods for shipment, after which he reports to the warehouse office goods ready to ship. When shipped the ticket or original order is again referred to the stock order clerk, who enters the shipment in the "Shipped" column, and the balance on hand is reckoned and entered in the "Stock" column.

SHEET NO. _____

ARTICLE Nameless Size #1

TOTAL SHIPPED 1907 2000

" " 190 _____

" " 190 _____

" " 19 _____

MAX. 800 MIN. 250 LOCATION OF STOCK _____ FLOOR _____ BIN _____

ORDERS.			SHIPPED.			REQUISITION FOR STOCK.			RECEIVED.		APPLIED ON ORDERS.			STOCK.		
DATE.	ORDER NO.	CUSTOMER.	QUAN.	DATE.	QUAN.	DATE.	REQ'N NO.	QUAN.	DATE.	QUAN.	DATE.	ORDER NO.	QUAN.	DATE	REQUIRED.	ON HAND.
4-1-08	2561	Jones & Co	100	4-2-08	100									4-1-08	100	300
4-4-08	2343	Smith & Son	125	4-4-08	125	4-2-08	486	500	4-3-08	35		Stock		4-2-08		200
									4-4-08	50		"		4-4-08		
4-16-08	3001	Brown & Co	200						4-8-08	200		"		4-8-08		
									4-13-08	225		"		4-13-08		
														4-14-08	125	
														4-15-08		575
														4-16-08	200	

Fig. 1.—Sample Sheet of Warehouse Office Stock and Order Book.

ARTICLE. TOTAL SHIPPED 19 _____

" " 19 _____

" " 19 _____

PLATE NO. " " 19 _____

	ORDERS.				SHIPMENTS.				
DUE.	DATE.	ORDER NO.	CUSTOMER.	QUAN.	DATE.	ORDER NO.	DATE.	QUAN.	REMARKS.

Fig. 2.—Record of Orders and Shipments.

STOCK. MAX. _____ MIN. _____ YEAR. _____

LOCATION.	ARTICLE.	ORDERS ISSUED.			PUT IN.		TAKEN OUT.		ON HAND.	
		DATE.	ORDER NO.	QUAN.	DATE.	QUAN.	DATE.	QUAN.	DATE.	QUAN.

Fig. 3.—Stock Record of Castings and of Orders Issued on the Foundry.

Replenishing Warehouse Stock.

(b) As the stock falls below the minimum quantity, a requisition is at once issued on the mounting or finishing department. As the goods are received from this department, a daily report is made by the warehouse man to the stock order clerk, who makes the proper entries in the "Received" column, the quantity in each case being carried to "Stock" column and showing a total.

Use of Accumulated Records.

(c) If this method be continued for a period of one or two years it is very plain to see that we will have a volume of valuable information that can be applied to a good advantage. We are able to tell at all times the number of orders on hand for any one article, requisitions issued for goods to go in stock, quantities received, stock on hand and the quantities sold for the above mentioned period, the last item of which will enable us to fix intelligently the maximum and to know what quantities to order for stock to meet future demands. In placing these requisitions for stock on the departments we must not lose sight of one important question: Do we know or are we in any position to tell, with the above information at hand, whether the demand for any one article will be as great during the year to come as was the case with the year just past? We do not; for while the outlook for the next year's business may be unusually favorable we may have discovered by referring to our records of two or three years that size No. 1 of a given article sold during one year at the rate of 2000 and size No. 2 sold at the rate of 500. Another year has shown that No. 1 decreased and No. 2 increased in sales, which might have again reversed during a third year. If we have placed our maximum during the last year at 2000 and wish to place a requisition on the mounting or finishing department for a six months' stock, we must endeavor to keep the stock within salable quantities and the conclusion is simply a matter of good judgment. We may decide that a six months' stock order will be 700 instead of 1000, which will, according to our best judgment, prevent an overstock and keep it within the danger line of decreased business.

What conclusions are we now able to draw from the above information? Simply that we have data at hand which will serve as a guide in preventing the undesirable overstock that so often results in goods becoming dead and obsolete. We cannot say that the method would entirely obliterate this, but it would tend to minimize such possibilities and be a big step in the right direction.

Goods Held for Shipment.

(d) Returning again to our stock order book, we must endeavor to avoid all confusion and have our records simple and accurate. With this in mind we will take, for example, goods reported for shipment and held pending shipping instructions. The goods must be placed in a section of the warehouse nearest the shipping floor, this location having been noted on the warehouse memorandum before being reported to the stock order clerk. We will note in the "Order" column of the sample sheet an order for Brown & Co., 200 articles, and in the "Stock" column, under "Required," 200, with no balance made and no entry having been made of shipment. This will show at a glance that the goods on this order are being held and the memorandum on file will give the location of the order ready for shipment. If this precaution is not taken and the entries and balances made when goods are reported, we will have a false statement of stock on hand, as well as being liable to overlook these prepared orders when taking inventory from the stock books at the end of the year.

The method as outlined above has been made as general as possible under the conditions mentioned and we might add that where the articles named are completed as one, it is simple and easily handled. However, if the articles are composed of many parts, any one of which might form a part of several other articles, it might be wise to rely on a second method briefly outlined below. This can be applied to good advantage in the departments where the many parts are used to make the assembled article and in conjunction with the warehouse stock order book.

While this record (see sample sheet, Fig. 2) may seem a duplication of the warehouse record and apparently call for unnecessary clerical work, it is a great advantage to the department inasmuch as it shows at all times an accurate record of the requisitions on file for goods to be made up for warehouse stock and orders from other departments that may be in the plant. The two methods worked together would undoubtedly be subject to many changes due to the size of the plant, the number of departments and the general disposition of the goods manufactured.

Castings Stored Before Mounting.

(e) The forms shown, Fig. 2 and Fig. 3, are intended to be used in the same department, but are to be handled entirely independent of each other, Fig. 2 being a record of orders and shipments, and Fig. 3 a stock record of castings and a record of orders issued on the foundry. This form is simple and needs little explanation. The method of locating the stock would, of course, be the same as outlined for the warehouse and a single sheet or page in this book used for each casting. Ample space is allowed for the name and description of the part, as well as a rough sketch if desired. The maximum and minimum quantities to be carried in stock can be ascertained precisely as in the first method. The columns for orders issued on the foundry, date and quantities received, taken out and on hand, are simple and need no further explanation.

The two methods here outlined worked in conjunction or separately may fulfill all requirements, but will without a doubt be subject to the changes found necessary in various plants owing to differing conditions.

Additions at the Duquesne Works.

The improvements and new construction under way at the Duquesne Steel Works and blast furnaces of the Carnegie Steel Company, Duquesne, Pa., are nearly completed. The old Bessemer works at this plant has been torn down to make room for 18 new 60-ton basic open hearth furnaces, of which six have been finished and are now in operation, and the other 12 will be completed in about six months. The plant originally contained 14 50-ton furnaces, and with the new 18 60-ton furnaces will have a daily capacity of about 4,000 tons of open hearth blooms. The 21-in. mill, on which 4 x 4 in. billets, sheet bars and splice bars are rolled, has been remodeled, and a new engine, built by Mackintosh, Hemphill & Co. of Pittsburgh, is about ready to install to drive the 40-in. mill. Two new blast furnaces, Nos. 5 and 6, are being added and are nearly finished. These are 23 x 94 ft., and each has four Massicks and Crookes hot blast stoves, 22 x 100 ft. The two stacks will be blown in before the first of the year, and the six furnaces will have a monthly capacity of about 90,000 tons of iron. This will all be basic, which will be used in the open hearth furnaces, as hereafter no Bessemer steel will be made at the Duquesne works. The two new blast furnaces will be driven by four Snow gas blowing engines, and there will be two steam engines for spares.

The statistics of failures in August fail for the first time in several months to show an improvement. *Dun's Review* says: "Commercial failures in August were 1,199, with $23,782,378 in liabilities. This compares with 850 failures and $15,197,749 liabilities in the same month last year. Manufacturing failures were 253, against 217 last year, while liabilities of $15,152,880 compared with $11,047,249 in 1907. There is no striking increase in number in this department, and if two large failures for about $10,000,000 are eliminated, the remaining suspensions involved only $5,152,880, or less than half the total manufacturing losses last year.

The postponement until 1917 of the Japanese International Exposition, which was to have been held in 1912, is officially announced. The action is due to economic reasons, and to the lack of time to make the proper preparations.

A New Rubber Insulating Machine.

The New England Butt Company, Providence, R. I., is building a new type of rubber covering machine for insulating wires and cables, which is shown in one of the larger sizes in the accompanying Fig. 1. By means of compression rolls, which also act as cutters, rubber strips are firmly pressed against and around the wire, adhering to it, from above and below, while the cutters remove the residue of the covering material, leaving a round product, with a slight ridge at each seam, due to a necessary beveling of the rolls at the points of intersection of the grooves. This method of insulating is comparatively new in this country, although it has been employed abroad with machines of radically different design. The more common process has been similar to that of making rubber tubing. Many electric companies now insulate their own wire, and consequently a regular market has been established for machinery for the purpose. The machine in question is designed for handling cables up to 3½ in. in diameter, and can be arranged to cover two or more smaller sizes of wires or cables, the cutters being grooved to correspond to the number to be insulated. The cutters are of hardened steel, 9 in. in diameter.

The machine consists of a rigid bed with heads driven through bevel gearing from a main shaft running along the back side of the bed. A friction device, consisting of two cast iron disks, between which is a disk of leather, is employed in the drive of each of two of the heads, in order to relieve any variation in feed between heads due to differences that may exist between the diameters of the several pairs of cutters. It is to be noted that the rollers serve not only as cutters and to press the rubber upon the wires, but also as feed rolls, in which work they are assisted by the reel that takes the finished product. The feed can be no faster in any part of the machine than that of the last head to take the wire, so that there is no need of furnishing that head with a friction. But in each of the other heads the friction, set at a predetermined tension, permits the rolls to slip should they feed at a speed different from that of another pair of rolls. By this arrangement, trouble due to the buckling of the wire or cable between heads is obviated. In the drive of each head compensating gearing is included, so that cutters may be turned down when dull and used until considerably reduced in diameter. One housing of each head, that at the front of the machine, can be removed to permit of the changing of cutters without interfering with either shafting or gearing, the removal of four bolts making this possible. Each head is furnished at the back with a wire guide and with an arrangement for holding the spools upon which are wound the rubber strips used in the insulation. The spools are held in either horizontal or vertical plane, the position depending upon whether a single horizontally supported spool is used with a folding guide, which laps the rubber over the wires, or two spools in vertical position, where two strips are employed, as shown in the illustration. For the single spools arms are furnished, fastened to the side of the head, holding the spools in alternation on the sides of the bed. The rolls of rubber can be used up to 14 in. diameter by 12 in. wide.

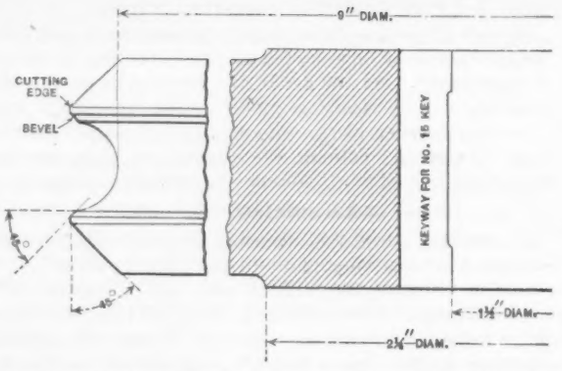


Fig. 2.—Section of a Single Groove Forming and Trimming Roll.

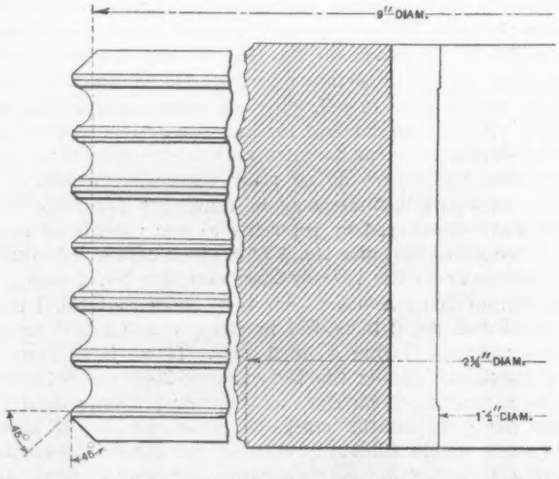


Fig. 3.—A Six-Groove Roll for Covering Several Wires at Once.

The wire and its two coverings, either two strips or the one folded strip, pass together into the rolls, two types of which are shown in Figs. 2 and 3. The grooves correspond in size to that of the product as it passes from the head, and are beveled away at the cutting edge, the purpose being to give a greater surface of contact between the edges of the strips of the insulation during the squeezing process. The cutters, of the same piece

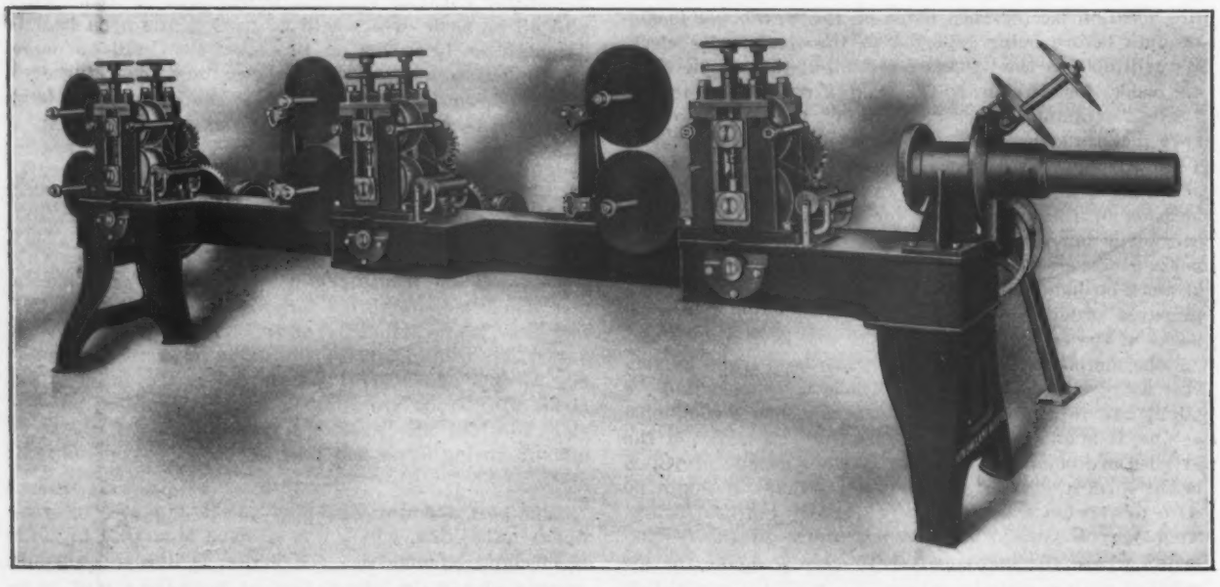


Fig. 1.—A Three-Head Rubber Covering Machine for Insulating Wires and Cables, Built by the New England Butt Company, Providence, R. I.

with the rolls, are little more than narrow rolls themselves, and remove the residue rubber by compression. Sharp edges would be impossible, because two such edges working one against the other would soon lose their keenness.

From one head the covered wire passes on to the next, where the process is repeated, as many coverings being applied as there are heads. By this means different qualities of rubber may be used for the several layers, which is an important advantage, as certain compositions work to best advantage in different relative layers.

The taping head, driven by gears and sprocket chain from the main shaft, gives a final covering of tape, as, for example, of paper or cloth, to the finished insulated wire, and will hold rolls of tape up to 6 in. wide and 10½ in. diameter. It is arranged with change gearing, giving lays of from 8 to 12 in.—*i. e.*, the spool carrying the tape can be revolved around the wire to give any pitch to the spiral from 8 to 12 in. The sprocket and driving chain are protected by a guard. The main driving shaft is driven by a 24-in. pulley carrying a 6-in. belt and running 150 rev. per min., which gives to the cutters a surface speed of 56 ft. per minute.

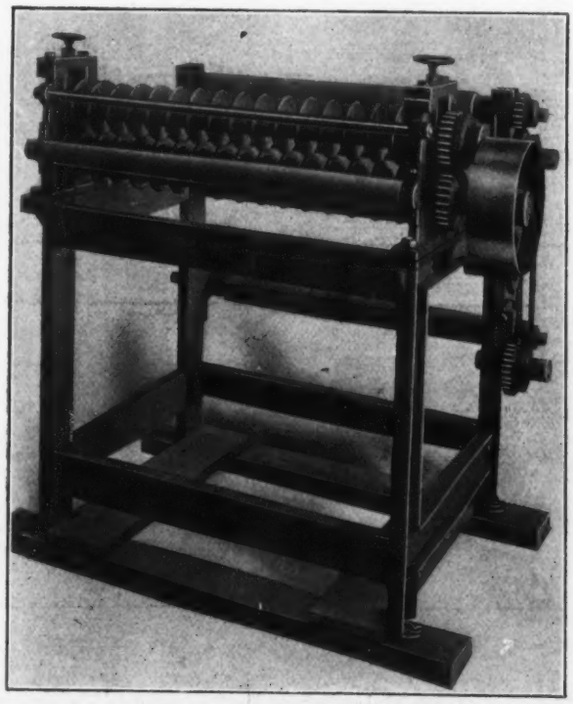


Fig. 4.—The Slitting Machine for Cutting Rubber Sheets Into Strips.

The pulley shown at the side of the bed, mounted on a cross shaft, is used for driving the winding-up fixture, which carries and operates the reel that takes the finished wire from the machine. It is designed to work a little faster than the machine itself, but its driving pulley slips to conform with the feed of the wire from the last head and taping attachment.

The rubber used is first rolled in sheets 36 in. wide and then cut up into strips of the required width by means of the rubber strip cutting machine, shown in Fig. 4. The rubber sheet is fed to the machine over a wooden roller to a gang of rotary shears set at the required distance apart for the desired width of strips. At the back of the machine are two shafts driven by adjustable frictions which carry the spools upon which the strips are wound, the strips passing alternately to the two shafts in order that there may be no interference between them. The cutters can be set for different widths, from ¾ in. up. The machine has a 10 x 3 in. driving pulley, which gives to the cutters a speed of 70 rev. per min.

The Pennsylvania Railroad has begun the use of concrete telegraph poles. Experiments will be conducted with such poles in the coming winter on a stretch of track between Pittsburgh and Chicago. It is believed they will better resist storms and will be longer-lived than wooden poles.

The Production of Abrasives in 1907.

The United States Geological Survey has issued its report on the production of abrasive materials in the United States in 1907, as prepared by W. C. Phalen. The value of the production of natural abrasives showed a substantial increase over that of 1906. In the following table natural abrasives are classified and total values are given for 1907 and the two preceding years:

Value of Natural Abrasives Produced in the United States.

Kind of abrasive.	1905.	1906.	1907.
Oilstones and scythestones..	$244,546	$268,070	$264,188
Grindstones and pulpstones.	777,606	744,894	896,022
Buhrstones and millstones..	37,974	48,590	31,741
Pumice	5,540	16,750	33,818
Infusorial earth and tripoli.	64,637	72,108	104,406
Abrasive quartz.....	*88,118	*121,671	*126,582
Garnet	148,095	157,000	211,686
Corundum and emery.....	61,464	44,310	12,294
Totals.....	$1,427,980	$1,473,393	$1,680,737

* Including feldspar used for abrasive purposes.

The statistics are given also of the production of artificial abrasives, which include alundum, carborundum and crushed steel. In 1907 their production was 14,632,000 lb., valued at $1,027,240, as against 11,774,300 lb., valued at $777,081 in 1906, and 9,820,000 lb., valued at $701,400 in 1905. There was no production of corundum in the United States in 1907, the item of "corundum and emery" in the above table representing for that year emery alone. The importations of emery and corundum in 1907 were valued at $412,630, and of all abrasives at $754,140. The value of all abrasive materials consumed in the United States in 1907 was $3,462,123, against $3,160,438 in 1906 and $2,784,001 in 1905. Canada is a producer of corundum, the output last year being 1892 net tons, compared with 2274 tons in 1906.

Carborundum is manufactured by a single firm in the United States, the Carborundum Company, Niagara Falls, N. Y. The foreign demand has increased so rapidly that the company has built at Düsseldorf, Germany, for the manufacture of carborundum wheels and abrasive articles, a plant which started up in February, 1907. Carborundum has been used for some time in the plate glass and granite industry, and more recently in the marble industry, a complete line of machinery having been developed, so that carborundum is rapidly dispensing with the old style machine tools and with skilled labor. It is being introduced into the woodworking and paper industries, and into the hat trade. Other applications are in nonslipping stair treads, carriage treads, nonslipping horseshoes and also in the construction of cement pavements and sidewalks.

Alundum is manufactured by the Norton Company, at Niagara Falls, from the mineral bauxite. The product of the calciners and electric furnaces at Niagara Falls is shipped to the company's plant at Worcester, Mass., where it is put through the various operations of alundum wheel manufacture. A recent application of alundum is as a refractory material. It melts at 2300 degrees C., and has a very low coefficient of expansion. It is moreover very inert chemically, and tests made in the basic open hearth furnace show that it is not appreciably affected by slags in these processes. A lining of the Deville furnace does not show deterioration after repeated burns at 1800 degrees C. It is yet to be determined just how much better alundum is than other standard refractories, as it is necessarily quite expensive. It is believed, however, that for a number of special purposes it will prove of value.

No new developments are reported concerning crushed steel abrasives, which are manufactured by the Pittsburgh Crushed Steel Company. They are chiefly used in the stone, brick, glass and metal trades, the size of the steel used depending on the character of the stone to be cut, rubbed, ground or polished.

The Schmitz Wire Flattening Mill.

The Walzmaschinenfabrik August Schmitz of Duesseldorf, Germany, manufacturer of hardened cast steel rolls and of wire machinery, has recently introduced a new design of its wire flattening mill, which is illustrated in the accompanying engravings, Fig. 1 showing the mill and back of it the coiler, and Fig. 2 the coiler itself from a different point of view.

The rolls are of glass hardened steel, ground true to size and highly polished. They are arranged for internal water cooling, the necks having a large bearing surface and running in bronze bearings, lined with antifriction metal. The roll housings are made of cast steel, so as to absorb vibration. Springs are provided between the rolls for raising the upper roll. The necks are protected from dust and dirt by detachable covers, fitted with

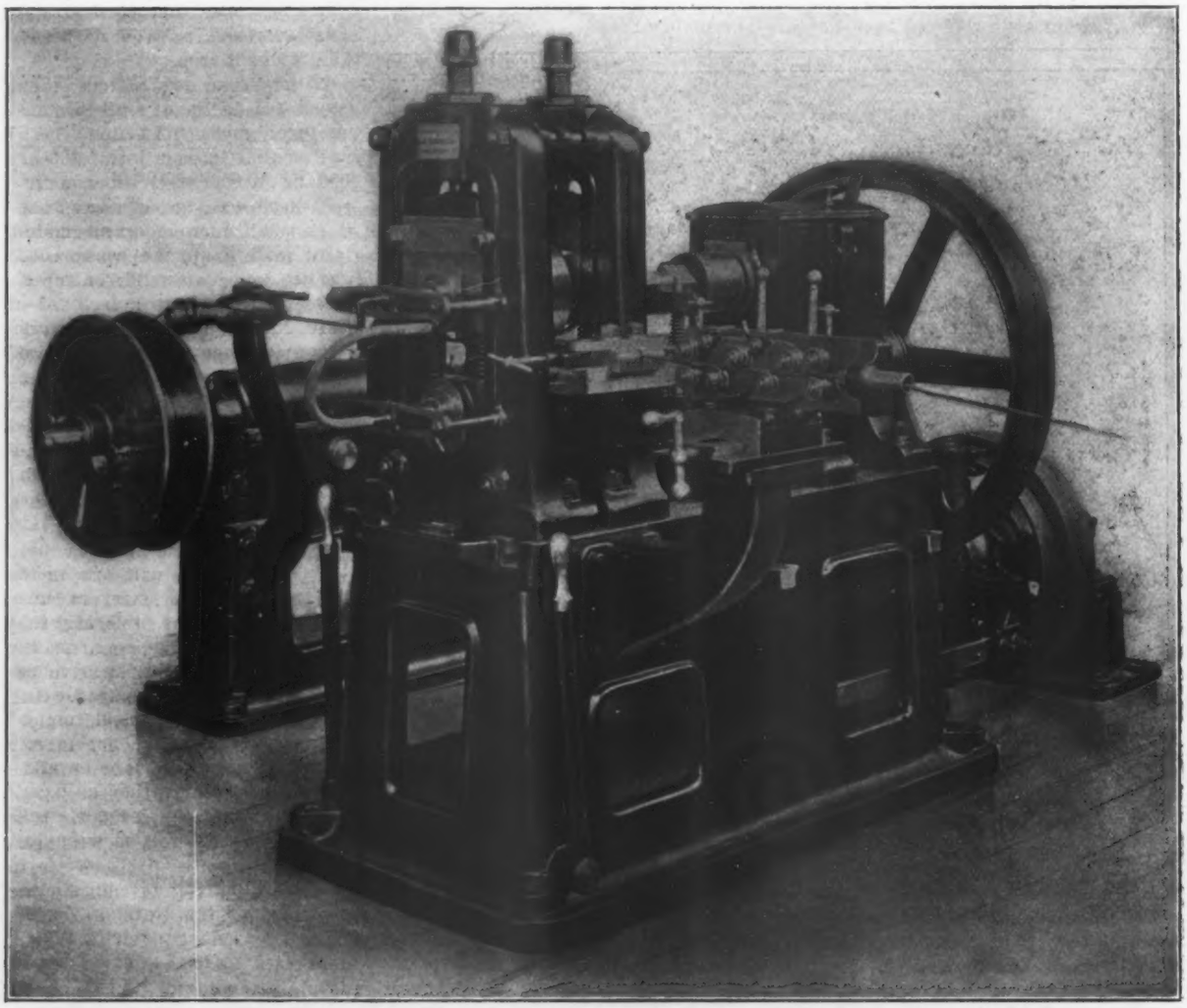


Fig. 1.—The Wire Flattening Mill Made by the Walzmaschinenfabrik August Schmitz, Duesseldorf, Germany.

a special oiling attachment. Brackets on the outside of the housing secure the upper roll bearing in its position. Changing the rolls can be done in a comparatively short time by loosening the two bolts and releasing the bracket, whereupon the bearing and rolls can easily be slipped out. The housings are held in place by keys in order to obviate vibration and prevent their shifting sideways.

The rolls are driven by pinions and breaking pins. In order to avoid so-called cog marks on the rolled material, the former have staggered teeth and the latter are supported. The pinion housings are so shaped that they form a box around them, which is filled with oil.

The driving mechanism comprises a fast and loose pulley and single spur wheel gearing. If required, the machine may be fitted with a friction coil clutch, instead of a loose pulley, as shown in the illustration. The base of the machine is turned up at the floor, thus forming a narrow drip pan or groove around, and preventing the waste oil overflowing and soiling the floor.

The mill shown in Fig. 1 is supplied with a wrench adjustment. As usually designed by the company, the rolls are handled by means of a central adjustment, which is recommended for rolling small strips when both pressure spindles are worked simultaneously with a band wheel. For equalizing the slightest irregularities, either of the spindles may be adjusted independently by throwing it in or out of gear.

A straightening device, new in design, is shown affixed to the front of the machine. The round wire first passes through a tubular guide. It is then drawn through the different straightening pulleys, which may be placed in the proper position by means of the levers. It will be observed that provision is made for lateral adjustment of the whole straightening device, and it may be used in a horizontal as well as a vertical position. Between the straightener and the rolls is attached the adjustable feeding guide, which is also provided with a brake for the purpose of putting the necessary tension on the wire or the strip to be rolled.

The coiler Fig. 2, which is a most important feature in wire rolling mills, forms a self-contained machine, and, being driven by a belt from the rolling mill, can be thrown in and out of gear. It is provided with a belt pulley and single spur wheel gearing of large dimension, so that it will easily coil the thickest wire. The winding drum can be contracted when the coiled wire is to be taken off, this being indispensable for the reliable working of wire flattening mills. The coiler is provided with a mechanism automatically reciprocal to the winding drum. A special device worked by a lever permits of throwing the reciprocating movement in and out of gear, which operation can take place even should the machine be running. The width of the winding drum is likewise adjustable, so that the coiler will easily meet the most varied requirements. The powerful arm extending in

front of the coiler serves to guide the wire. The small guide pulley which distributes the rolled material on the drum can be adjusted sideways.

If required, the Schmitz mill can be provided with attachments for finishing material rolled thereon, namely, a combined straightening device and edger. Both attachments are mounted on a small table in front of the machine and turn on their axes turretwise, so that either of them can instantly be placed in working position by a simple turn of the lever, thus dispensing with troublesome and tedious fastening and unfastening of the adjustments.

The mill is made in two sizes, "A" having an approximate width of rolls of 5 in. and of diameter of rolls of 8 in. Its speed is about 45 revolutions, the speed of the drive pulley being 270 rev. per min. It weighs net 3.1 tons, and packed for export 3.6 tons. It will handle wire up to ½ in. diameter. Size "A¹" has 10-in. rolls, with 6-in. face, the speed of the rolls being 50 revolutions. The Schmitz mill may also be arranged by turning special grooves into the rolls for rolled wire shapes of every kind, such as sectional wire, cable wire, &c.

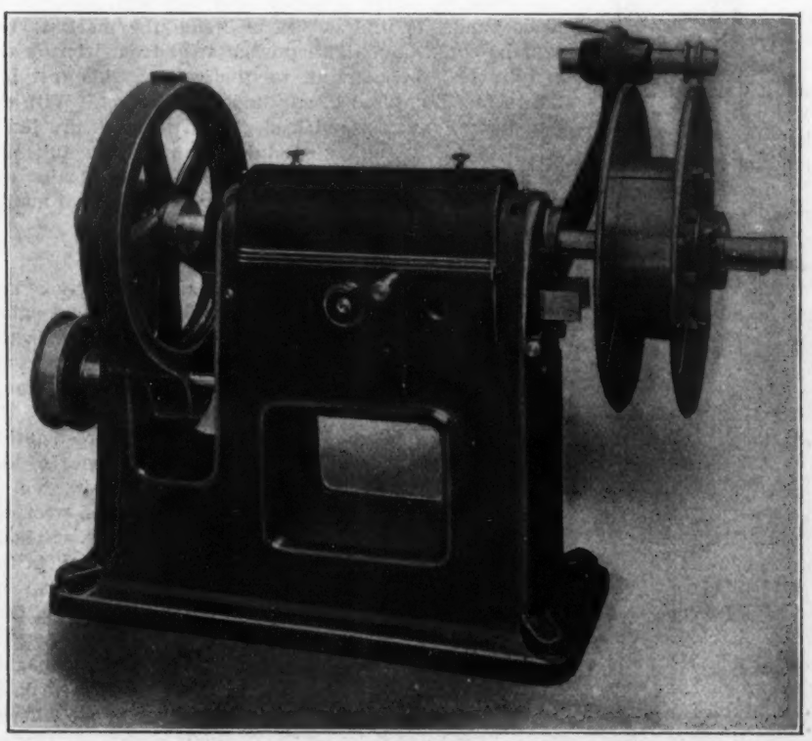


Fig. 2.—The Coiler of the Schmitz Wire Flattening Mill.

A high temperature flame for brazing, welding and a variety of uses where the local application of heat is necessary is being obtained by a new burner using a common air blast and a small quantity of city gas. This burner, which is the invention of A. K. Schaap, Fulton and Cumberland streets, Brooklyn, N. Y., is now being used for a variety of automobile work coming into a jobbing shop. City gas only is under normal city pressure, and the air blast varies from 30 to 50 lb. With this it is possible to melt cast iron on open hearth and braze inaccessible places quickly and readily. One of the features of the apparatus is the small amount of space taken by the brazing tools, some of them being smaller than an ordinary soldering iron.

The receivership of Milliken Brothers, Inc., New York, has again been extended for a month, the receivers representing for the third time that another month was required to perfect their plans for a reorganization. Their report shows that the cash receipts from June 11, 1907, to August 26, 1908, were $3,749,773, and that the balance on hand on the latter date was $555,106. The report of a probable alliance with a steel company outside of the United States Steel Corporation has been allowed to become public, but is not officially confirmed.

The Relative Corrosion of Steel and Wrought Iron Tubing.*

BY HENRY M. HOWE AND BRADLEY STOUGHTON.

Is steel, tube steel, materially more corrodible, intrinsically and incurably, than wrought iron, as unprotected steel and iron are surely far more corrodible than well painted steel and iron? Or is it merely that ill made steel and steel of unsuitable composition are more corrodible than well made wrought iron? If the former, then in each and every test which is sufficiently wide to make reasonable allowance for the usual caprices of corrosion, tube steel must necessarily corrode and pit materially more than wrought iron. If the later, then, though in certain tests tube steel may corrode and pit more than wrought iron, either because that steel is ill made or of unsuitable composition, or because of the caprices of corrosion, yet in other tests tube steel should resist corrosion as well or better than wrought iron.

If the latter proves true, then has such a degree of skill in manufacture and inspection been reached that in each lot of 100 or 1000 or 10,000 steel tubes delivered there need be no single tube which shall corrode or pit materially more than the worst tube in a like lot of wrought iron tubes. Is steel as trustworthy as iron?

To these questions this paper seeks an answer from the evidence at hand, in view of the existing distrust of steel, indeed, the general belief that steel is intrinsically and incurably far more corrodible than wrought iron. Where we touch on other questions we do it to throw light on these.

The day has gone by when this society can hear with patience that, because some steel of unknown source has misbehaved, therefore steel cannot be so made as to behave well. The serious study and great efforts made in the last decade to fit steel tubing to resist corrosion are not to be ignored. To ridicule them would be ridiculous. Have they or have they not yielded regularly a steel which resists corrosion substantially as well as wrought iron?

What we have to say is based in part on investigations which we have made on behalf of the National Tube Company, and in part on our independent inquiries along lines which suggested themselves to us while we were making those investigations. As we understand, that company is interested in overcoming what it believes to be the existing prejudice against steel tubes. Our inquiry relates only to uncoated tubes. It does not concern itself with the relative merits of steel and iron for conduits, the life of which depends upon the integrity of their coating.

Prima Facie Considerations.

There is no reason why steel ought to corrode worse than wrought iron, at least no reason strong enough to call for unusually convincing evidence. The most marked constant difference between them, the presence of cinder in iron and its absence from steel, creates no such reason. In that the particles of cinder themselves resist corrosion they protect the metal beneath. But their distribution is such that this protective effect may be equaled or even outweighed by their opposite effect of hastening corrosion by difference of potential. To increase this

* Advance extracts from a report to be published in full in Vol. VIII of the *Proceedings* of the American Society for Testing Materials. An abstract of a paper preliminary to the report, read at the eleventh annual meeting of the society, was published in *The Iron Age* of July 2, 1908, page 29.

mechanical protection by increasing the quantity of cinder should hardly be practicable, at least in case of tubes which need strength, because this would weaken the metal tangentially—*i. e.*, transversely. In cases in which strength may profitably be sacrificed to gain incorrodibility, it may perhaps be practicable to make use of this principle. This might perhaps apply to the metal for certain tanks. The evidence, which is presented and discussed in detail in an appendix, may be summarized as follows:

Tests Favorable and Unfavorable to Steel.

Steel corrodes and pits less than wrought iron in our own tests: A, lasting seven months, on 12 pieces of steel skelp in competition with 10 pieces of wrought iron skelp from the best makers, in hot aerated salt water, a medium previously found extremely unfavorable to steel; D, in Principal T. N. Thomson's tests on three steel and three iron tubes for about a year in hot water under service conditions; E and H, on simultaneous exposure of many steel and iron pipes to sulphuric acid coal mine water; J, in the actual use of 11 steel and 8 iron tubes in railroad interlocking and signal service; K, in certain locomotive boiler service, and N, in tests in which 16 pieces of wrought iron and steel tubing were buried in dampened ashes for 16 months. In cases E, H, J and K the tests were carried to destruction.

Cases K and L, trials in locomotive and in stationary boiler tubing, tended to show that there was no material difference between steel and iron. Case O, a 26-month test in the Gayley blast drying coil at the Isabella Furnaces, showed no difference between steel and iron, both of which had scaled uniformly.

Five cases—C, F, G, I and Q—are more or less unfavorable to steel. Of these, C and Q relate not to modern steel, but to that of 1897 or earlier, and Q, indeed, reports a condition of affairs wholly exceptional; while the evidence under I is obscure if not self-contradictory, and is not shown to apply to modern steel tubing. In case F, the only one of those unfavorable to steel which is known to apply to modern steel tubing on simultaneous exposure pushed to destruction, to sulphuric acid mine water, the average life of three steel tubes was 11 per cent. less than that of three iron ones in series with them, and the life of the shortest lived steel tube was 14 per cent. less than that of the shortest lived iron tube.

This is all the evidence we have found and received permission to cite, though we have asked manufacturers prominently and financially interested in showing that steel is worse than iron to give the addresses of those who could give us evidence. None of that which we have found but have not yet received permission to cite is unfavorable to steel.

To sum this up, tube steel has corroded less than wrought iron in seven distinct sets of tests by seven different sets of observers in seven different places. In three other sets steel and iron behaved substantially alike. Eight of these ten sets were under conditions of service, and in six of them corrosion was pushed to destruction. In five cases steel corroded worse than wrought iron, but in the only one of these in which the steel tube is known to be modern the difference was moderate. Further in our own tests, B, steel tubing of 1906 pits very much less than that of 1897 from the same makers. The fact that steel has behaved as well and often better than wrought iron in so large a number of tests seems to us cogent evidence that steel is not intrinsically materially more corrodible than wrought iron. The fact that in one set, F, modern tube steel has corroded a little worse than wrought iron does not conflict with this inference in the least.

The Popular Opinion of Steel.

Opposed to this evidence there is a very widespread and deep distrust of steel tubing; indeed, a belief that it habitually pits deeply, and that wrought iron corrodes uniformly, a belief contradicted by the evidence presented in the accompanying exhibits. This distrust, so far as we know, is not based on any direct competitive tests between materials known to be good modern steel and wrought iron, respectively. Note that we restrict ourselves to known good modern tube steel, made specially to resist corrosion. Instead, this distrust seems to rest on the results of practical experience. Most of this experience cannot have been with good modern steel tubing, but must have been with the older tubing which preceded it. Now the present survival of this distrust in spite of the apparent great improvements in making tube steel resistant, and in spite of the evidence that it does resist as well as iron, need not surprise us in the least. Such a survival is always easy. It is especially easy under the unusual conditions of this case—namely, that the user has not been able to tell steel from iron by his own observation, and that in a large proportion of cases tubing sold as wrought iron has actually been steel, as shown under J and T in the appendix.

We believe we are right in saying that of the three great classes of users—architects, civil engineers and plumbers—the last only have in general attempted to learn by direct personal observation whether a given tube is steel or iron. This the plumber has thought that he could do with certainty by the threading test. But the evidence under S shows that this test, at least in most hands, is useless. It is beside the mark to say that he could have distinguished steel from iron by the etching test, because, as we understand, this test has not in fact been used to any important extent. With the best intentions steel and iron carried in stock are likely to get mixed up, unless special precautions are taken to keep them separate. The fact that neither dealer nor user could tell them apart has removed one usual motive for preventing errors.

The Popular Prejudice Unjust.

This actual ignorance of users as to whether any given lot of pipe is steel or iron seems to us of value, not, of course, in showing whether steel or iron is the better, but in interpreting the existing distrust of tube steel in the face of direct cogent evidence tending strongly to show that this distrust is unjust.

No matter how strong we may think the presumption created against tube steel by the very existence of the present distrust, no matter how heavy the burden of proof that we may demand of the defenders of steel, we have no right to shut our eyes to the evidence. Nobody has a right to say either that defects which may in the past have lessened tube steel's resistance cannot be cured by skill and care, or, except on valid evidence, that they have not been cured.

The theory that steel is intrinsically and incurably more corrodible than wrought iron is contradicted flatly by the evidence above. It therefore must be abandoned, unless resuscitated by correspondingly direct, convincing and abundant counter evidence, clearly relating to well made modern tube steel. Nobody doubts that ill made steel may misbehave. The distrust of steel may be nothing but a survival from a day when it was justified, or it may be only an unjustified inference that because some steel corrodes badly all must. The distrust can be explained away; the evidence cannot. Therefore the evidence and its implications must stand until refuted.

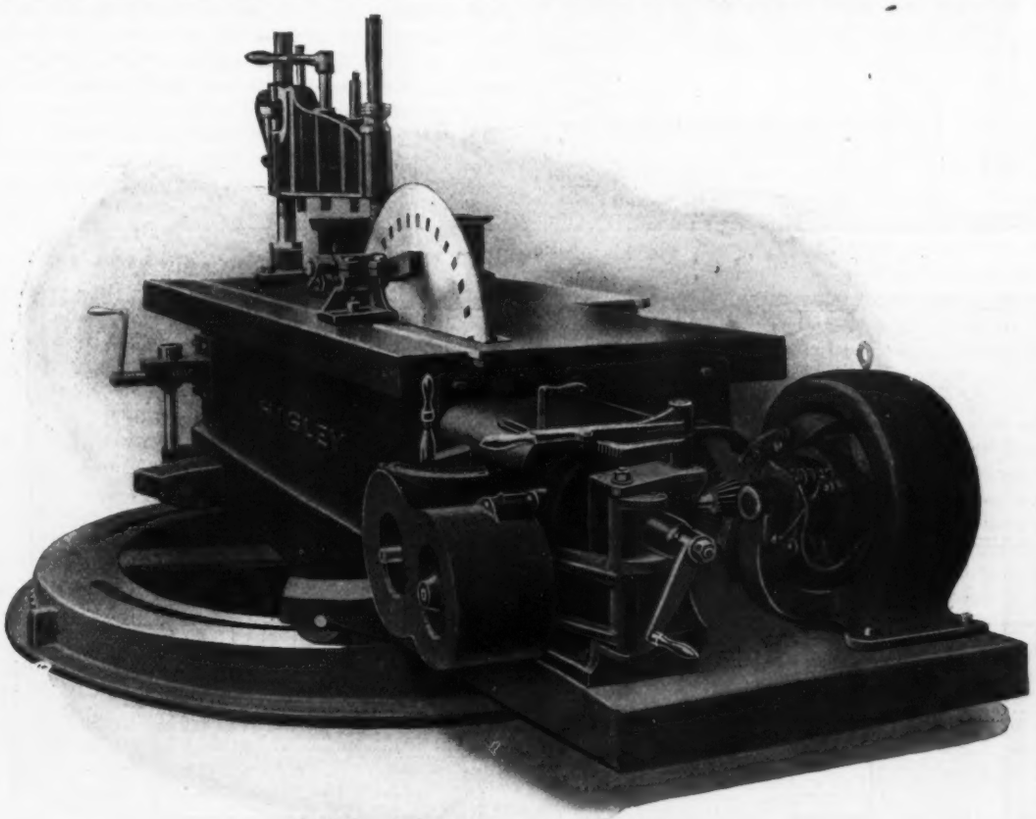
Present-Day Steel Tubing More Reliable.

Our second question now arises: "Have manufacture and inspection been so perfected that, reproducing continuously the conditions which have made so much of the steel of our present evidence as incorrodible as wrought iron, they may deliver only steel of like incorrodibility?" That they will be so perfected some day we can hardly doubt; but have they been already? To prove this so that the community can rely confidently on it needs more evidence, especially of cases in which corrosion is pushed to destruction. We understand that such evidence is accumulating rapidly. But though not proved, it is made easily credible, indeed, to our minds, on the whole probable, (1) by the very fair degree of harmony among the large number of tests of modern steel reported, and (2) by the fact that out of the 22 pieces of modern steel tubing represented in cases A, D and E, not a single one shows any abnormal pitting nor behaves materially worse than the worst of its iron competitors, of which those in test A, at least, were from the best makers. This probability is somewhat strengthened by the many cases summarized under P.

A New Higley Cold Saw.

A new feed mechanism for the table type saw, built by the Higley Machine Company, 91 Liberty street, New York city, has recently been developed, the general arrangement of which is shown in the accompanying engraving. The principle is the same as the friction feed used in the machines originally built for the Cambria Steel Company, and consists of two friction disks having ample bearing surfaces and which are held together by a powerful spring, the tension of which can be regulated to suit the rate of feed desired.

The action of this feed is entirely automatic, and is controlled by the resistance of the cut. When properly adjusted the saw will relieve itself, instead of being forced ahead at a speed injurious to the blade. In connection with these friction feed disks a set of slip gears is used, by which the maximum feed can be set at ½, 1, or 1½ in. per min. The gear box is self-contained,



A Revolving Table Type Cold Saw Built by the Higley Machine Company, New York.

and the changes are made by the handle, shown on top of the graduated scale. This combination of the friction disks and change gears gives a range of automatic feeds from 0 to 1½ per min.

The illustration shows the table type saw when mounted on a turn table. The machine is revolved by hand, and may be clamped in any position in an arc of 90 deg.

At the close of the International Congress for the Protection of Industrial Property at Stockholm last week Edward B. Moore, United States Patent Commissioner, said that several changes in patent laws will be presented to the official Congress in Washington next year, when the delegates will have full power. He added: "It is probable that several nations will endeavor to make conventions with China, Japan and the countries of South America, under the terms of which they will receive the same consideration as is now extended them in America by the treaties recently ratified which attracted so much attention at the congress. The American laws, especially those relative to patents on inventions, seem more satisfactory and far-reaching than those of any other country, and doubtless the other countries will modify their laws so as to conform to the American regulations."

Coal Briquetting in 1907.

The coal briquetting industry should make rapid progress in this country during the next few years, according to E. W. Parker of the United States Geological Survey. Although the production in the United States in 1907—63,153 net tons, having a value at the plants of $244,942—seems insignificant when compared with the output of briquetting plants in Germany in 1906—about 16,000,000 net tons—it is of great importance as indicating that a beginning has been made and that consumers are being gradually educated in the advantages of briquets for efficiency, ease of handling and cleanliness.

Ten plants were in operation in 1907, although one of these, at Pittsburg Landing, Cal., was burned in July and up to the close of the year had not been rebuilt. The location of the plants and the character of the fuel and binder used in the operations are reported by Mr. Parker in a paper just published by the Survey as an advance chapter from "Mineral Resources of the United States, Calendar Year 1907."

The following bids were opened at Washington September 1 for 10 torpedo boat destroyers and three colliers, the bids on the former being for the hull and machinery only: Bath Iron Works, two vessels, at $644,000 each; the New York Shipbuilding Company of Camden, N. J., two vessels at $665,000 each; William Cramp & Sons of Philadelphia, two vessels, at $669,000 each; the Maryland Steel Company, two vessels at $708,300 each, and three vessels at $703,600 each; and the Newport News Shipbuilding & Dry Dock Company, two vessels, at $620,000 each. The specifications call for 29½ knots speed. Several firms submitted special bids for boats of higher speed. For the colliers, William Cramp & Sons offer three vessels of 7,620 tons for $525,000 each; the New York Shipbuilding Company, three vessels of 7,200 tons at $570,000 each; the Newport News Company, three vessels of 7,200 tons, at $524,000 each; the Maryland Steel Company, three vessels of 7,200 tons, at $479,600 each, under Class 1, and at $498,600 each under Class 2.

Furnaces for the Enameling Industry.

BY JOSEPH VOLLKOMMER,*

Enamel consists of a mixture of silica and alkalies so proportioned that the various substances will, at a certain temperature, fuse into an opaque glaze. Without this process of smelting there can be no enamel; therefore, furnaces are the vital feature of every enameling plant. Aside from experiments carried on with electric glass and enamel furnaces, there are two types of smelting furnaces in use, and each kind is serviceable in its way.

Crucibles for Watch Dial Enamels.

Where small quantities of high grade enamels are wanted, such as are used for watch dials, jewelry, &c., the crucible or pot furnace has its advantages, also for experimental work. It takes less time and fuel to smelt a heat in a properly constructed crucible furnace; on the other hand, only a comparatively small quantity of enamel is obtained per heat. Crucible furnaces can be operated either singly or arranged in groups of nine pots or more. They are charged from above and the smelted enamel is poured off underneath by removing the clay prop covering the small hole in the bottom of the pot.

Formerly crucible furnaces were much used for the manufacture of colored enamels. At present enamel colors are mostly added to the mill and ground with the enamel or glaze; therefore this type of furnace is not so much seen any more in enameling plants.

Tank Furnaces for Large Quantities of Enamels.

Tank furnaces are needed wherever large quantities of enamels of the same kind are required. Their construction resembles that of the glass tanks. The receptacle for the enamel is a large square or rectangular basin formed of tiles and slabs of refractories, with a bottom sloped so that the liquid contents of the tank will drain to the lowest point where the enamel runs through a spout to the outside into suitable receptacles. To obtain uniform and satisfactory results it is necessary to have a well constructed furnace, well adapted to the kind of fuel that is supposed to be used.

Furnaces with direct coal fire should have fireboxes with a large grate area requiring only low draft pressure, so as not to tear ashes along. They should be so built that the flame will fully develop before passing over the smelting tank. To prevent contamination of the enamel by cinder and other impurities, the tank should be rather short with a sufficiently high roof, so as not to force the flame into the tank. The flame should be clear and have a fairly straight current, strong enough to carry, without reverberating, any impurities over the tank into the stack. The openings leading to the stack can be rather large to prevent choking of the draft. Coal containing a high percentage of sulphur is unfit for use, as sulphur is very detrimental to enamels, causing blisters and other defects.

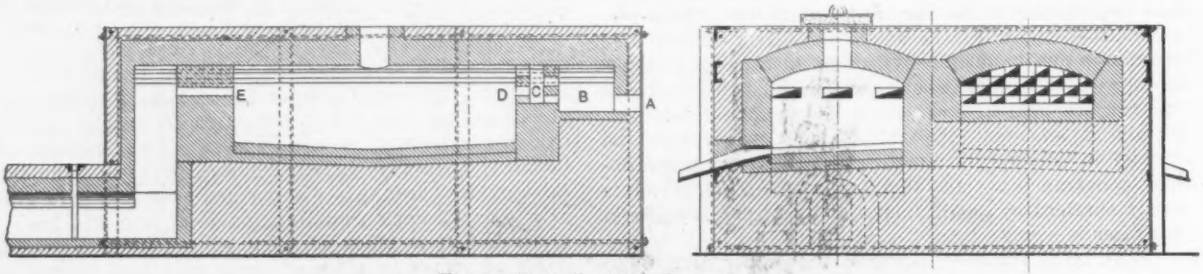


Fig. 1.—Tank Smelting Furnace.

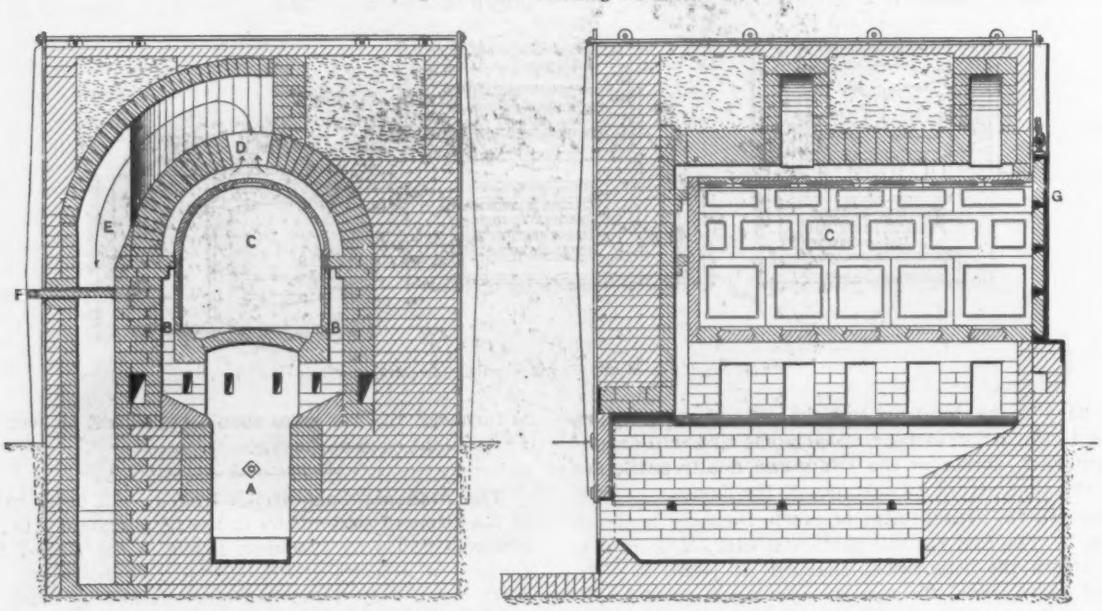


Fig. 2.—Sections Through Muffle Furnace.

FURNACES USED IN THE ENAMELING INDUSTRY.

Fuels for the Smelting.

Smelters heated by producer gas have the advantage of a greater and more uniform heat, developing a clear flame that carries less impurities. As a consequence, it takes less time to make a smelt and a better grade of enamel is obtained. Natural gas is an ideal fuel for enameling purposes, but, of course, limited to certain localities.

Furnaces with crude oil as fuel require either a special combustion chamber or a very high bridge wall, so as to prevent the burners from spraying particles of oil or carbon into the tank, and thereby affecting the color of the enamel.

Construction of the Tank Furnaces.

To economize in space, cost of construction and fuel, tank furnaces are frequently built in pairs, with tanks side by side as illustrated in Fig. 1. This double smelter was designed for natural gas. Gas and air enter at point A, both unite and ignite in the combustion chamber B, pass through baffle bricks or checker work C, at which

* Vollkommer & Co., Pittsburgh.

point the fully developed flame enters tank D, spreading over it and smelting its contents. The flame leaves the tank through outlets E to the flue connections.

An arrangement of double smelters so constructed that the off gases of the first tank will smelt the contents of the second, may appear to be at first glance a great saving in fuel, yet it is not advisable, as the flame will always carry some of the contents of the first tank into the second, and thus contaminate the contents of the latter. Another disadvantage is that in cases of repairs both tanks have to remain idle.

Should a continuous demand for enamel warrant it, smelters can be built either with regenerative or recuperative devices, which while somewhat expensive will permit a better utilization of waste heat.

Muffle Furnaces.

The enamel is burnt or fused to the metal in muffle furnaces, so called from the retort or muffle which serves as a receptacle for the ware to be enameled. The muffle is supposed to protect the ware from direct contact with the flames and impurities carried by them, such as ashes and cinders. It must be so constructed that it will absorb the furnace heat and radiate it toward the inside uniformly at an even temperature, sufficient to fuse the enamel on the steel ware and to give the glossy porcelain-like appearance we are familiar with. This object is easily obtained by small muffles of retort shape made in one piece.

With large furnaces, however, the proper design and construction of muffles is a very serious problem, since they have to be built in sections out of special tiles. Owing to the action of heat, these muffle tiles will expand and contract, abrase at the joints and finally crack and chip, and thus permit an entrance of the flames.

The general arrangement of muffle furnaces is shown in Fig. 2. The fuel (in this particular case oil or natural gas) enters the combustion chamber at point A. The ignited gases travel through the opening B around both sides and back of the muffle C, uniting at the top. The two openings D connect with the flue E. The current of the flame is regulated by a damper F.

This muffle is closed by means of a door G, which is lined with fire brick and slides on guides. To overcome the weight of this door balance weights, either on levers or operated by means of sheaves with wire ropes, are used. For large muffles air hoists are preferable, provided compressed air is obtainable. The charging apparatus in such cases is also operated by means of compressed air.

Fig. 3 shows twin muffle furnaces, as frequently built in Germany. The gas producer is arranged behind the muffle and does not present any unusual features. A valve V regulates the quantity of gas admitted into each side of the furnace; two other valves—V 1—located in front at the side of the furnace admit the air which passes through one regenerative chamber G, while the off gases pass through the other chamber; thus the two muffles are heated and used alternately.

As soon as one muffle has the proper temperature for burning the ware by means of the absorbed heat the valves are reversed and the second muffle gets the benefit of the flame, while the burnt ware from the first one is removed and the muffle charged again.

Operation of Muffle Furnaces.

Muffle and smelting furnaces suffer through irregular production. Their construction suits them best for continuous operation. It results in a great waste of fuel to operate them intermittently or at long intervals. It takes nearly a day to bring either of these furnaces from the low temperature to a working heat, besides the sudden changes of temperature resulting from intermittent operation ruins the brick work, especially such parts as the muffle or tanks of the smelters, which will soon crack and become defective.

It is erroneous to suppose that the nature of the flame in a smelting or muffle furnace is immaterial, providing sufficient heat is obtained. Defective muffles will admit fire gases, which will frequently affect the ware to be burned, in various ways. Blisters or pin holes may occur, or the ware may lack in gloss or be discolored. Such phenomena are in many cases not caused by the enamel or impurities carried by the flame, but are the result of imperfect combustion owing to lack of oxygen.

If in such cases the combustion gases had contained a slight excess of oxygen, such defects might not have occurred. Reducing flames or flames lacking oxygen will absorb oxygen from the chemicals, especially the metallic oxides, of which the enamel consists. White enamel, for instance, exposed to reducing flames, provided same contains oxide of lead, will discolor and even turn dark gray or black. Enamels containing oxide of iron will have a greenish tint in place of being brown; such containing oxide of copper in place of green may turn reddish or brown in a reducing flame. Therefore, especially in muffle furnaces, the fire gases should be neutral or even contain a slight excess of oxygen.

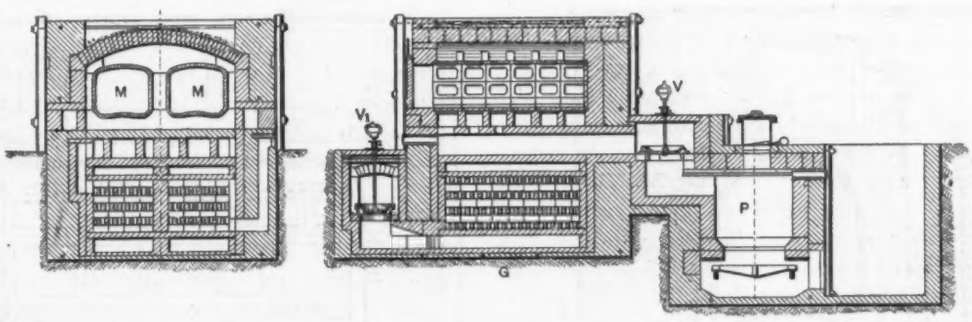


Fig. 3.—Twin Muffle Furnace with Gas Producer.

The Alabama Coal Strike Ended.—An order calling off the strike of coal miners in the Birmingham, Ala., district was issued by President Lewis of the United Mine Workers of America at the beginning of this week. The strike began July 6 and has been marked by much violence, including the firing by strikers upon a train carrying nonunion men and representatives of mining companies. Several men were killed in this and other encounters. For four years the leading iron and steel producers in the Birmingham District having their own coal mines have operated them independently of the union. The defeat of the union in the late strike means that practically all the coal mines in the district will be nonunion.

The International Harvester Company, Chicago, has formed an employees' benefit association. The plan provides that every employee who contributes 2 per cent. of his wages to the fund will receive benefit. The family of a man killed in an accident, either on or off duty, is to receive two years' wages. For the loss of both eyes or loss of both hands or feet the victim receives two years' wages. Retirement is optional at 65 years of age and compulsory at 70. The service dates from the employment in any of the corporations whose business has been purchased by the International Harvester Company. As an inducement to employees to join the association the Harvester company will contribute $25,000 to the fund if 50 per cent. of the employees join, and $50,000 if 75 per cent. become members. Membership is voluntary, and in joining employees do not waive any legal rights against the company in case of accident.

THE IRON AGE

Established in 1855.

New York, Thursday, September 3, 1908.

Entered at the New York Post Office, as Second Class Mail Matter.

DAVID WILLIAMS COMPANY, - - - - - PUBLISHER
14-16 PARK PLACE, NEW YORK

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CHARLES KIRCHHOFF, - - - - - VICE-PRESIDENT
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The American Answer to the British Patent Act.

The past week is made noteworthy by the expiration on August 28 of the year of grace granted foreign patentees by the British act for the revocation of patents if within a reasonable time manufacture under them is not carried on in Great Britain. This does not mean that revocations necessarily become effective at once. Applications for such revocation may now be made and the order may be carried out forthwith; but again, its enforcement may be delayed for a "reasonable interval," and later, on the giving of "satisfactory reasons" for nonmanufacture in Great Britain, there may be a further extension for not more than 12 months. The avowed purpose of the act being to prevent the importation of patented articles manufactured in other countries, and to compel their manufacture in Great Britain, no hopes need be built on a friendly attitude of the British patent courts. Enough has been disclosed in the preliminary sounding of sentiment in England on behalf of American interests to show that the language and procedure of diplomacy will not be heavily drawn upon in carrying out the new statute. Judging from some published comments in Great Britain, the case was simply that the time had come to levy some sort of tribute on the too successful German and American competitors of the British manufacturer. The fact need not be veiled, moreover, that modern international competition is commercial war.

Little remains for discussion after the able analysis of the situation presented by John D. Morgan, of the New York Patent Bar, in our issue of August 20. It is important, however, that manufacturers express themselves on the question as it comes before Congress at its next session. While German holders of patents in Great Britain are equally affected, American manufacturers find a degree of summariness in the new law, since this is now the only country out of the three in which a foreign patentee may enjoy protection without "working" his patent. As Mr. Morgan says:

> The German law lays the requirement of "working" a patent upon both native and foreign inventors alike. The new English statute puts it upon foreign inventors only. The United States has left immune from such a requirement both native and foreign inventors.

The new British act changes materially the conditions that have been maintained for years under the well understood patent policies of the leading industrial nations. The arrangements already made for the building of works in England by German and American interests give some indication of the possible disturbance of international trade. Now comes the question, which American manufacturers will mainly decide, what action shall be taken at Washington in the amendment of our patent laws. A general law, like that of Germany, requiring the working of all patents, is one alternative. As pointed out in an editorial in *The Iron Age* of March 5, 1908, such a law would be opposed by a good many interests which have taken out or purchased patents and locked them up, making no use of them, while they prevent their use by others. Another possible course is to leave undisturbed the situation at home, and require the working of patents taken out by foreigners. This would be following substantially the policy which according to British estimates will add tens of millions of outside capital to manufacturing investments in that country. Manufacturers would do well, either individually or through their various associations, to give their Senators and Representatives their views on these proposals.

British patentees, to be sure, have far less at stake in the United States than have American patentees in Great Britain, but the continuance of the present policy in this country may now more appropriately be classified as benevolence than enlightened regard for home interests.

Traffic Contracts with Industries Under the Hepburn Law.

The traffic officials of many important railroads have taken the position, on the advice of their counsel, that the Hepburn law does not permit them to enter into contracts with industries for the purpose of fixing freight rates for any definite period of time. This interpretation of the law has proved embarrassing to many prospective industries and investments of capital. In one typical case a group of business men have been considering plans for establishing an industry that would ship a very large amount of freight and give employment to a large force of men, but owing to the uncertainty regarding rates there are grave doubts whether the enterprise will be established. Until recently the railroads have been free to fix by contract for a term of years the rate that would be charged, and such a contract would safeguard the investment, but recent decisions of the United States Courts have thrown doubt on the legality of traffic contracts.

The carriers are even unwilling to make freight contracts for a short period, to cover shipments of materials for bridges, irrigation works and other enterprises on which deliveries extend over a few months or a year. Steel and other materials are usually contracted at a delivered price for important construction work, even the railroads themselves making a practice of buying their materials delivered at some point on their own rails. The margin of profit is usually small on these contracts, and in many cases that could be cited an advance in freight charges has caused a loss to the shipper. Enterprises and construction work that would employ scores of thousands of men are held in abeyance on account of uncertainties regarding rates, at a time when the policy of the government should promote employment and the general progress of the country.

It may be that counsel for the railroads have taken too critical a view of their rights under the law. There is nothing in the Hepburn law or any of the interstate commerce acts that expressly forbids a contract relation between the carrier and the shipper. The United States Supreme Court has said with considerable emphasis that the law was intended to promote trade, not to restrain it, and where a contract will create new traffic and employment for the people by safeguarding an investment

of capital, with no possible injury to the public, it would seem as though nothing short of an emphatic prohibition by Congress could make such a contract illegal.

The leading rate case that has been decided by the Supreme Court was the packing house case, already reviewed in *The Iron Age*. In that case the packers at Kansas City made a contract with the Burlington Railroad for a few months, and it was stipulated that the rate from the Mississippi River to New York should be 23 cents. The Eastern lines raised the rate to 35 cents, but the Burlington protected the contract, and this road and the packing houses interested were fined because the contract was a "device" within the meaning of the Elkins act to transport the property at less than the legal, published rate. The majority opinion of the Supreme Court was apparently based on the assumption that a railroad has the right at any time, regardless of contracts, to advance a rate by complying with the provisions of the law which regulate the filing of tariffs with the Interstate Commerce Commission. According to this decision, it is not a crime to break a contract, but it is a criminal act for both the carrier and the shipper, if property is carried at less than the regular tariff rate.

This case, however, might have taken an entirely different course if the shippers, instead of relying upon a private settlement with the railroad, had publicly applied to a Federal court for an injunction to restrain the carriers interested from breaking a contract by filing a higher rate. Unfortunately, there has been no action of this kind since the Hepburn law went into effect. In several cases the Federal courts have issued injunctions, on the petitions of shippers, to hold new tariffs in abeyance until the Interstate Commerce Commission could determine whether they were "reasonable," but no contract rights were involved in these cases. The State courts have been very strict in enforcing traffic contracts with industries, in local or State traffic which is under their jurisdiction, and they have not expended any judicial energy in determining whether the rate was "reasonable" if the contract was regular from a legal and business standpoint.

The proposition that a railroad cannot make a contract with a shipper to fix its charges for a definite period of time will lead to grave consequences if it is recognized by the courts. The shock to the fundamental principles of commerce would scarcely be greater if the railroad could order locomotives or rails for future delivery, and then, when the time for payment arrived, decide that it would pay a different or less price than that which the manufacturer had before him at the time he accepted the order. The railroad, in its relations with the shipper, would become an irresponsible corporation, subject only to the feeble and overworked powers of a commission to determine whether rates were "reasonable." Men who contemplate investing their capital in any enterprise want their cost of doing business to be determined by something more definite than the imperial grace of the government. After having invested their capital in an industrial corporation they do not want to be at the mercy of another corporation which may take whatever share it elects of their profits, with no recourse for the owners of the industry excepting to abandon their plant and move within the sphere of influence of some other corporation, where the same experience might be repeated.

A freight tariff is the voluntary act of a corporation, filed with the Interstate Commerce Commission by an agent who holds a power of attorney of the corporation. The law does not limit the powers of the carrier in the act of initiating a rate, any more than it limits the owner of a blast furnace in making a price on his product, excepting that if the shipper who has to pay the charges files a complaint the Interstate Commerce Commission then has the power to fix a reasonable rate. The making of the tariff is left entirely to the carrier, and scarcely one tariff in a thousand is afterward challenged by proceedings before the commission. To prevent manipulation of rates by "midnight" tariffs, the Hepburn law requires that an existing rate must not be changed until the public has been given 30 days' notice, but it does not limit the life of a rate after it has become effective. If the rate which the carrier has voluntarily made is reasonable no existing tribunal can change it. All business corporations are free to regulate their voluntary acts by contracts, for long periods of years, and it would infringe upon his fundamental rights if the shipper is forbidden by law to protect himself in the cost of transportation. It may be that the only means of enforcing a traffic contract would be through a court of equity, but this is the only practicable remedy to defend many other property rights.

Weakness in the French Accident Insurance Law.

The French experiment in insurance of workmen against accident has developed unforeseen conditions. The percentage of accidents serious enough to keep men away from their work has increased materially and steadily since the establishment of the law in 1899. The progression in the number of minor accidents is intensified by the constant increase in the average duration of temporary unfitness for work following an accident, and consequently in the average compensation due the workmen. The employer bears the burden of this insurance, and insurance rates must necessarily increase with the degree of risk. Moreover, the burden of surgeons and physicians' bills falls directly upon the work's owners. The result is a formidable one, figuring actively in cost of production.

Exact data are available as to the working of the law. The Building and Public Works Department states that the number of cases of temporary unfitness for work per 1,000,000 francs of wages insured has risen from 74.6 in 1899 to 145.4 in 1906. The Iron & Steel Works Guarantee Syndicate shows that the number increased 21.53 per cent. between 1905 and 1906, while the increase from 1900 to 1906 has been 51.93 per cent., indicating that the evil is a rapidly growing one. As to the duration of disability one guarantee syndicate points out that the average period of unfitness entailed by accident was 17.02 days in 1899 and 23 days in 1907, an increase equal to over 35 per cent. Since the enforcement of the law of March, 1905, providing for the payment of half wages during a certain period following an accident, the number of accidents resulting in incapacity for work during 5 to less than 11 days has gradually decreased, the tendency on the part of the men being to increase unduly their absence from work, to cover the necessary period to bring them under the half-pay clause.

Contributing largely to this condition is the right given the men to elect their own doctors in case of accident—a privilege proper enough in theory, but which under its growing abuse places employers at the mercy of a certain class of medical practitioners usually lacking both conscience and skill. These men, who are the French types of a class of American physician who works with the "ambulance chasing" lawyers, conduct a regular system

of enlistment of workmen. Professional calls on the injured are multiplied, as are also the dressing of wounds, massages, treatment with X-rays, &c., in order to pad their fees to the extreme limit. The employers, who must pay the bills, are practically helpless, for litigation under the French laws is expensive, and in these cases the establishment of the employer's contention is difficult. Medical expense attending the insurance system has increased in seven years by 283 per cent. It is stated that several such physicians residing in Paris, men who were obscure and without hope of more than ordinary success in the legitimate practice of their profession, are now earning $10,000 a year in this manner. In the iron and steel trades cases of partial but permanent disability have increased by 87.89 per cent. from 1900 to 1906, and in the same period in the building trades and public works they have increased 252 per cent.

Strongly inherent in a certain large class of men is a willingness and even eagerness to take advantage of invested capital. They consider it no wrong to obtain more than their due from those who employ them. This element in human nature should be taken into account in the framing of laws. In the French case the weakness is now well demonstrated, and is worth remembering by those in this country who are urging measures along generally similar lines. In reality, the employers do not bear all the additional burden resulting from fraudulent practices under the accident insurance laws of France. Either the public pays more in consequence, or other items of cost are reduced, and the natural saving would be in wages. What may be termed the employes' involuntary contribution to the maintenance of the insurance may in some cases be increased to an extent corresponding to the amount of fraud.

A Blow to Usurious Loans to Workmen.

The hardest blow that has been dealt to the practice of loaning money with assignment of wages as security is that embodied in a recently enacted Massachusetts law which provides that no assignment of wages shall be valid unless approved by the borrower's employer, and, if the borrower is married, by his wife as well. It is believed that this act will practically put a stop to an evil which has been serious. Workmen have placed themselves in the hands of usurers, rates of interest being so high that it has often been impossible to make any impression on the principal, which may increase indefinitely. Employers have been seriously annoyed by the practice, for in spite of posted announcements that an assignment shall be considered as satisfactory cause for dismissal, employes have persisted in taking the chance, expecting to meet the obligation before it becomes necessary for the lender to present the assignment to the employer. In Massachusetts this practice was given almost a quietus by compelling the recording of assignments in order to make them binding; but other States have not gone that far. The greatest protection of all lies in the necessary co-operation of the employer in order to make an assignment valid. If he sees that the loan is necessary he may permit it, with the consent of the wife of the borrower. But it is safe to say that such cases will be rare. Probably an advance in wages would be fully as likely an outcome of the employe's application at the office. The protection to the workman's family is also a very good thing, in that it may curb extravagance and extreme improvidence. Money lenders of the stamp who advertise extensively that they loan money without security will be seriously handicapped in their operations under the law. It is already strongly apparent that Massachusetts has been rid of the greater number of the class, and that the cities of adjacent States have increased their quota of usurers proportionately.

CORRESPONDENCE.

The Ballentine Method for Determining Hardness.

To the Editor: I have just read the account on the first page *et seq.* of your current issue of "Shore's Scleroscope," and think it would be interesting to your readers if you should describe the Ballentine method and apparatus for determining hardness of materials, if you have not already done so. This apparatus has been in use for a year or more. It consists of a guiding tube incasing a drop hammer, which is held at the top of the tube by a spring latch. The lower end of the hammer is provided with a small anvil, to which is clamped a standard soft metal recording disk by means of a spring clamp. At the lower end of the tube a test pin holder is held in a guide, in which are inserted the test pins for testing the various materials. The upper end of the test pin holder is provided with an anvil the same diameter as the one on the lower end of the hammer. The thickness of the recording disks is measured with a micrometer before placing on the drop hammer. After a test has been made the thickness of the disk as left between the two recording anvils is again measured and the difference between the two dimensions represents the penetration of the recording disk, and may be used as the hardness record. For example, if a recording disk measures 0.3 in. before test and 0.156 in. after test, the penetration would be the difference, or 0.144 in., and would be known as hardness No. 144.

The foregoing description is taken mainly from a circular stating that the instrument is made by Tinius Olsen & Co., Philadelphia. ALEX. E. OUTERBRIDGE, JR.

PHILADELPHIA, PA., August 27, 1908.

The Small Bessemer Converter.

To the Editor: In your editorial of July 30, under the title "The Position of the Baby Bessemer," you criticize the conclusions of the report of the American Iron and Steel Association for 1907. As the quotation from said report is not correct, inadvertently we suppose, you using the words "the growth of our steel industry," which should have been correctly "the growth of our Bessemer steel industry," your criticism is based, unfortunately, upon the erroneous quotation. Your statement that the "little pots, or baby converters," are losing ground, or that the "baby" converter is destined to remain an infant forever, is, we fear, also based upon erroneous information.

The comparison you make concerning the growth of the open hearth production is undoubtedly well founded upon facts, the increase of production being very large; but the statement of the American Iron and Steel Association being based upon the production of Bessemer steel remains correct. Yet if the "baby" converter is supposed to have made such a pitiable showing, how can it be explained that open hearth foundries have put up baby converters? The reason is simple: The open hearth occupies a field for heavy castings which it will continue to hold. When small and medium castings are needed, however, the open hearth people have felt that it would be a good idea to call on the baby converter. The use of small and medium steel castings is comparatively recent, and, like all new things, it takes time to create confidence. This, we believe, will account for the seemingly slow growth of small converters. However, at no time since their introduction in 1898 has the number of small converters retrograded; on the contrary, it has increased, and is increasing every year. Like an infant to which you liken the small converter, it takes time to grow, but infants oftentimes become great men. The small converter is in the field for a certain sphere, and, like the baby, it grows.

Believing that you are not willing to let an error pass

in your publication, which we have been reading for over twelve years, and whose value we appreciate, we are prompted to lay the above facts before you.

COLNÉ & Co.

NEW YORK, August 27, 1908.

[The omission of the word "Bessemer" in our quotation from the report of the American Iron and Steel Association does not affect the facts as presented, because the data all deal with the Bessemer steel industry except when specifically stated. We not only adhere to the opinion that the statistics of production show that the progress of the "baby" Bessemer has been very slow, but we may add that before many years we expect to see it completely overshadowed by the electric furnace in the steel foundry.—EDITOR *The Iron Age.*]

The Protection of Steel and Iron Surfaces.

The Paint Manufacturers' Association of the United States, 3500 Grays Ferry Road, Philadelphia,, Pa., maintains a Scientific Section, of which Robert S. Perry is director and H. A. Gardner is chemist. The Consulting Board consists of Dr. Charles B. Dudley, chemist of the Pennsylvania Railroad, Altoona, Pa.; Dr. Allerton S. Cushman of the Department of Agriculture, Washington, D. C., and S. S. Voorhees, engineer of tests, office of the Supervising Architect of the Treasury Department, Washington, D. C. Mr. Gardner furnishes the following interesting statement of tests of preservative compounds now being made by the Scientific Section of the Association:

The extensive work of Dr. Allerton S. Cushman upon the causes underlying the corrosion of iron and steel surfaces gave to the scientific world a clear understanding of this subject and proved the electrolytic theory. This theory attributes the solution and subsequent oxidation of iron to a transfer of electricity between the free hydrogen ions of water and the iron ions of the steel. This electrical action is very evident in those samples of steel that contain impurities having a difference in potential to that of the iron, and is most marked in those samples of steel having an uneven distribution of such impurities.

Dr. Cushman's work upon this subject led him to investigate the possibilities of securing protection for steel surfaces by the use of certain pigments and compounds. Bichromates of the alkaline earth metals when in solution were found to give to iron surfaces perfect protection from corrosion. Even when present in extremely small quantities these salts cause the iron to assume a passivity that persists for a considerable length of time after the metal has been washed free from the salt. For obvious reasons these chemical products are unfit for use in paints, but they suggested the preparation of pigments from the chromates and their trial for this purpose. Many chrome pigments were prepared, and although some gave protection to the steel they were placed in contact with others gave a negative result and could be classed as rust stimulators.

The Scientific Section of the Paint Manufacturers' Association, following out and confirming Dr. Cushman's work, decided to give it a practical application, and secure more definite knowledge as to which pigments are safe and which are unsafe for use in the preservation of iron. For this purpose the Scientific Section proposed the erection of a fence having several hundred large steel plates upon which to try out the value of the different pigments when contained within an oil medium. The American Society for Testing Materials was notified of this project, and at a meeting of committees E and U of this association it was decided that these committees would co-operate in supervising and inspecting the work. satisfactory specifications to be prepared and adopted by these committees. Such a practical method of determining the best preservative compound for steel and iron surfaces at once appeals to the engineer, the architect, the mechanic, the painter and to every technical man who recognizes the necessity of information such as will be derived in this way.

The place selected for the test is Atlantic City, N. J., where a fence 300 ft. long will be erected within a short distance from the shore. The fence will have ample accommodation for 300 steel plates which will rest upon girders 24 in. from the ground. The plates are to be rolled from three classes of metal—Bessemer low carbon steel, open hearth structural steel and pure ingot iron. The plates are to be 24 in. wide and 36 in. high, rolled to No. 11 gauge, approximately ⅛ in. in thickness.

Four plates of each metal are to be used for each formula. Two of these plates are to be painted in the condition as received after previously scratch-brushing the surface, thus following out the ordinary methods of painting structural iron. The balance of the plates are to be pickled in sulphuric acid in order to completely remove the scale, subsequently neutralizing the sulphuric acid with lime.

The plates are to be painted under cover so as to secure equal conditions throughout the test and to prevent the weather from interfering with the work. A uniform spreading rate is to be used for the formulas, and the work will be conducted in a thoroughly systematical and practical manner by the inspectors and painters chosen for the work by the committees. A series of unpainted plates will be placed upon the fence with the painted plates, so that the rapidity of corrosion of the various metals may be watched.

Preliminary laboratory tests have been conducted by the various members of the committees and by the Scientific Section to ascertain the rust inhibitive values of the various pigments when placed in contact with steel surfaces enveloped by water. These tests and others carried along similar lines give the requisite data upon which to base the formula for the field test. Pigments of different types will be selected, those having rust stimulating properties and those having rust inhibitive values will be tried out in the same manner, ground in the same vehicle and applied to the same kind of metal. At proper times the various committees will make inspection of the fence to note the wearing qualities of the different formulas, and reports will be issued when it is deemed advisable, giving the results of the test.

National Founders' Association.—The annual convention of the National Founders' Association will be held at the Hotel Astor, New York City, Wednesday and Thursday, November 18 and 19. The Administrative Council will hold a meeting at the same place on Monday and Tuesday preceding.

The Union Foundry & Machine Company, Mansfield, Ohio, which has been conducting a general foundry business since 1872, the year of its inception, is about to reorganize and incorporate. The plant consists of several buildings, one being a large three-story brick, of modern construction, containing machine, cabinet and pattern shops, at the rear of which stands a brick constructed powef house and blacksmith shop, with the foundry in a separate building, covering about 4000 sq. ft. of floor space. Two floor brick pattern vaults, two frame warehouses and some smaller buildings are also on the property. It is well situated in the manufacturing district of the city and fronts on one of the principal streets, and has excellent shipping facilities. N. O. Fleming, 204 East North avenue, Pittsburgh, who is in charge of the reorganization, states that the new company will, in addition to carrying on a jobbing business, manufacture a full line of iron pressure castings, grate bars, boiler castings, engines, &c. For this purpose additional equipment will be required for the foundry, and some enlargements are to be made to the plant within a short time.

The Treasury Department reports a deficit for August of $3,908,628 and for the two months of the fiscal year of $28,778,065, as against $7,455,598 to the corresponding date last year. Internal revenue receipts were $41,600,000 for the past two months, as against $45,000,000 last year, but customs receipts are unsatisfactory, showing only $43,139,000 for July and August, as against $58,552,859 last year in the same period.

The American Well Works Turbine Pump.

A new type of pump that is attracting much attention among hydraulic engineers on account of its high efficiency under conditions favorable to its use is the turbine centrifugal. The American Well Works, Aurora, Ill., has recently brought out a two-stage type of this style of pump. The company states that an experience of 40 years in the manufacture of all kinds of pumping machinery has enabled it to form a very accurate estimate of the relative efficiencies of the different styles of pumps, and the efficiency of the turbine is not so high as the centrifugal in conditions favorable to the use of the centrifugal and therefore not so well adapted for fire protection service. The highest average efficiency yet attained in a turbine pump is about 50 per cent., while a two-stage centrifugal of the company's manufacture, operating under a 100-lb. fire protection pressure, will maintain an efficiency of 60 to 80 per cent., depending upon the size of the pump. Where water is obtained from deep wells of sufficient size to admit a turbine, and there is a high lift to the surface, however, the turbine may be installed to raise the water to the top of the ground and deliver it to a two-stage centrifugal to raise it to 100 lb. pressure, and thus obtain the most efficient pumping plant for fire protection.

To determine conditions favorable to the installation of turbine pumps the manufacturers make a comparison of the relative efficiencies of deep well pumps. The single acting cylinder which delivers the capacity of the cylinder intermittently on the up-stroke of the piston is least expensive to install, but delivers the smallest quantity of water. The double acting cylinder which delivers the full capacity of the cylinder on both the down-stroke and the up-stroke will deliver double the quantity of water raised by the single acting cylinder. This does not appear correct when one considers the greater displacement of the piston in the cylinder on the down-stroke, but the manufacturers assert that since the flow is constant, there is no water hammer in the casing and the double acting cylinder can be operated at a higher speed, and thus readily delivers double the quantity of water.

The turbine will deliver practically the capacity of the casing less the displacement of the shaft, but turbines have not been made of a diameter less than 10 in., and are therefore only adapted for wells of large diameter. Turbines now in use have a diameter of from 10 to 15 in., and deliver from 18,000 to 72,000 gallons of water per hour. A turbine will deliver more water from a deep well than any kind of a pump except the air lift, but a turbine will maintain an efficiency of 50 per cent., while the efficiency of the air lift is only from 15 to 20 per cent. The air lift, however, can be operated in a smaller borehole, and if desired several wells can be pumped with a single air compression plant, whereas a separate turbine is required for each well.

In explaining the greater efficiency of the centrifugal over the turbine in conditions in which there is not a greater lift to the intake from the surface than would be overcome by the force of gravity, and therefore adapted for the use of the centrifugal, the claim is made that in a centrifugal pump the thrust of the shaft and friction is less, resulting in higher efficiency.

In the turbine pump brought out by the American Well Works, the intake of water is around the water step or balancing chamber placed at the bottom of the lower cylinder. The diffusion vanes in both water cylinders are placed at an angle of 45 degrees, and rotate at about 1700 rev. per min. In the superstructure of the pump at the surface the main shaft passes through two sets of ball bearings, which reduce the friction to the minimum and hold the shaft in perfect alignment. Leading from the bottom of the discharge pipe, immediately above the upper runner, to the water step at the bottom is a water port, through which the pressure of the head in the discharge pipe is transmitted to the balancing chamber at the bottom, and tends to overcome the downward thrust.

By this force it is possible to lift the shaft, but in practice this perfect adjustment is not usually obtained, although the thrust is largely overcome. This, together with the perfect bearings, explains why so high efficiencies are obtained in the turbine as a deep well pump, but the greater number of bearings with the resulting greater friction show why the centrifugal has higher efficiency in pumping where the pump can be placed close to the water supply. This turbine pump may be belt driven from any convenient power, but where electric power is obtainable an electric motor can be mounted vertically on the pump head, and thus secure the most compact and economical power.

Canada's Swelling Bounties on Iron and Steel.

TORONTO, August 31, 1908.—Last session the House of Commons ordered a return to be brought down showing the sums paid out on bounty account in the fiscal year 1907-1908, ending March 31. This week it was completed and made public. It shows that the total amount disbursed in bounties during the year was $2,787,358, divided as follows: On pig iron, $863,816; steel, $1,092,000; wire rods, $347,134; lead, $51,001; petroleum, $391,217; manila fiber entering into binder twine made in Cannda, $42,000. Iron and steel, as will be seen, came in for $2,303,140 altogether. The output of steel entitled to bounty was 661,940 tons. It is expected that the payments for the current year will aggregate a still larger sum than for last year. For one thing, the demand for iron and steel promises to be much greater.

A Larger Total for 1908.

In the present calendar year the bounty on pig iron made from Canadian ore is $2.10 per ton, and from imported ore $1.10 per ton; on steel it is $1.65 per ton. These rates were paid throughout the whole of the last year, both calendar and fiscal, and will hold for nine months of the current fiscal year. On January 1 they decline to $1.70 on pig iron of all Canadian ore, 70 cents on pig iron of imported ore, and $1.05 on steel. Pig iron made in electric smelters will continue for the next two calendar years to draw $2.10, and for the same period steel manufactured by the electric process will earn a bounty of $1.65 a ton under the new act. Lead will be entitled to a higher bounty than it has heretofore drawn. Manila used in the manufacture of cordage generally is now eligible for bounty, whereas formerly no bounty was paid on it except when it was made up into binder twine. It appears safe to say that the total bounty payments of the current fiscal year will exceed the total of $2,787,358 for last year.

Growing Opposition.

In the Montreal *Witness* of recent date a writer examines the bounty system in its relation to the Dominion Iron & Steel Company and strongly condemns it. The agitation against the system is continued by the organ of the Grangers' Association. Every increase in the payments adds to the unpopularity of the bounties. Since the country's prosperity has received a sharp check, voters who were heedless before are now becoming interested in what the antibounty agitators have to say. As the Dominion general elections are likely to take place in about two months the feeling against the bounties will have an early chance to express itself at the polls. The reaction in trade touches not only the private citizen, but also the Government. In the portion of the current fiscal year already gone by the imports of the country have steadily declined, and with them of course the revenue from the customs has declined. In a time of growing expenditure the questions of making both ends meet is thus made a harder one for the Government, and makes its largess on bounty account look less defensible.

In discussion of the bounty system one important effect always escapes notice—namely, its tendency to restrict competition. If the bounty rates, like the tariff rates, had been established without reference to duration, there is hardly a doubt that the country would now have more iron and steel plants than it has. But limiting them to a five-year term deterred capital from venturing into new iron and steel plants here, inasmuch as a great part of a five-year period would be taken up in building of works.

Both political parties in Canada have adopted the bounty system for the fostering of the iron and steel industry. There are indications, however, of a change of attitude on the part of the Conservatives, who are now the Opposition. In fact, when the last bounty act was past both the leader of the party and its chief financial critic in the House took the ground that the work for which the bounties were originally devised is done, and that protective duties will now serve for all industries. Only a few days ago the Toronto *Mail and Empire*, the chief organ of the Conservative party, said that to have fostered the production of pig iron and steel solely by high customs duties would have been to oppress industries using iron and steel, and of course blast furnaces and steel plants could not prosper if the industries to which they were to supply raw material were not able to do business. Now that the country has efficient blast furnaces and steel plants, the Conservative organ would favor the substitution of additional customs duty for the bounty. As the Liberal party is in principle opposed to such aids, though in practice committed to them, a strong public sentiment adverse to the bounties could make the present period their last. C. A. C. J.

OBITUARY.

WILLIAM WEIHE, who was president of the Amalgamated Association of Iron, Steel and Tin Workers at the time of the Homestead strike in 1892, died at Pittsburgh August 24. In recent years he had been a member of the Board of Inquiry of the Bureau of Immigration at Ellis Island, N. Y.

EAGLETON HANSON, secretary of the Trenton Iron Company, Trenton, N. J., died August 27, 1908, aged 66 years. He was born in Bradford, Yorkshire, England, and in 1863 came to the United States, working for several years in the Eagleton Wire Works, New York, owned by his uncle. He served in the Union Navy as paymaster's clerk in the Civil War, and in 1865 went back to the wire works. In 1870 he entered the employ of the Trenton Iron Company and later became its secretary.

JOHN JAMES GREENOUGH, Brookline, Mass., for many years well known as an inventor, died August 25, aged 96 years. Born in Boston in 1812, he studied medicine and afterwards law, but his bent was mechanical. For several years, before 1841, he was superintendent of the Patent Office at Washington. He was one of the first to take up the problem of the sewing machine, and made several inventions ante-dating those of Elias Howe. He was a partner of Professor C. G. Page in the development of the electro-magnetic engine, which first gave to the world the practical application of electric power for traction purposes. In 1853 Mr. Greenough associated himself with the publication of the *American Polytechnic Journal*, in which the claims for United States patents were printed with illustrations, the magazine constituting the foundation of the illustrated patent office reports of to-day.

PERSONAL.

H. F. Martin, general manager of sales of the Pennsylvania Steel Company, Steelton, Pa., has returned from Europe.

E. G. Ladd, who for 15 years has been connected with the contracting department of the Chicago Bridge & Iron Works, has engaged with the Morava Construction Company, 1242 Marquette Building, Chicago, in a similar capacity. In addition to looking after railroad business, he will give his attention to the sale of water towers and tanks.

Noah H. Swayne, 2d, resident manager of Rogers, Brown & Co., Philadelphia, Pa., has returned from a seven weeks' trip abroad.

H. S. Lewis, formerly sales agent for the Marine Coal Company, has become associated with the Iron City Coal & Coke Company, Pittsburgh, Pa., as sales agent for the company's coal department.

Fred A. Gardner, chief engineer of the Union Iron Works, San Francisco, Cal., for several years, has resigned to engage in business of his own. George A. Armes, who has been his assistant for three years, has been appointed to succeed him.

R. W. Martindale, San Francisco, Cal., Pacific Coast sales manager for the United States Cast Iron Pipe & Foundry Company, has returned from a Mexican trip.

B. B. Quillen of the Cincinnati Planer Company, Cincinnati, Ohio, who with a party of friends has been traveling in the New England States, is expected to return about September 6.

C. E. Pease, president of the Buckeye Iron & Brass Works, Dayton, Ohio, a few days ago celebrated his seventy-second birthday anniversary. He is still active in the management of the business.

President W. P. Robertson of the Robertson Iron & Steel Company, Cincinnati, is expected home from Europe early in September.

Alexander S. Mitchell, 45 Broadway, New York, has been appointed to represent the Champion Rivet Company, Cleveland, Ohio, in New York city and surrounding territory, for the sale of the Victor boiler, ship and structural rivets.

Accidents in Pennsylvania Industries.

HARRISBURG, PA., September 1, 1908.—In a statement calling attention, to the fact that last year there were 1422 fatal and 6140 nonfatal accidents in the industrial establishments of Pennsylvania, Chief John L. Rockey, of the State Bureau of Industrial Statistics, says that "while the industrial life of the State shows improvement in the matter of the better sanitary conditions of the mills, mines and workshops, and while the general physical condition of nearly every class of employees is now much better than it was a dozen years ago, it is painful to record the fact that there is an appalling number of fatal accidents yearly." The table of accidents shows the following:

	Fatal.	Nonfatal.
Anthracite mines	607	1,746
Bituminous mines	437	1,678
Iron and steel mills	176	1,179
Pig iron industry	72	623
Textile industry	12	82
Tin plate works	..	2
Other industries	118	830

It thus appears that almost three-fourths of the fatal and over half of the nonfatal accidents have occurred in mines and that over one-sixth of the fatal and 30 per cent. of the nonfatal accidents can be charged to the iron and steel industry in one form or another.

The Clay-Working Industries in 1907.

The value of the marketed clay products of the United States in 1907 was $158,942,369, according to Jefferson Middleton, of the United States Geological Survey, who has prepared the following table:

	1906.	1907.
Common brick	$61,300,696	$58,785,461
Vitrified paving brick or block	7,857,768	9,654,282
Front brick	7,895,323	7,329,360
Fancy or ornamental brick	207,119	361,243
Enameled brick	773,104	918,173
Drain tile	6,543,289	6,864,162
Sewer pipe	11,114,967	11,482,845
Architectural terra cotta	5,739,460	6,026,977
Fireproofing and terra cotta lumber	3,652,181	3,162,453
Hollow building tile or blocks	934,357	1,088,165
Tile (not drain)	4,634,898	4,551,881
Stove lining	743,414	627,647
Firebrick	14,206,868	14,946,045
Miscellaneous	3,988,394	3,000,201
Total brick and tile	$129,591,838	$128,798,895
Total pottery	31,440,884	30,143,474
Grand total	$161,032,722	$158,942,369

The only important product showing a large gain was vitrified paving brick, which increased in value $1,796,514, or 22.86 per cent. Firebrick made the next largest gain—$739,177, or 5.20 per cent. Next to common brick this is the clay product of greatest value.

Trade Publications.

Engines.—Robert Wetherill & Co., Inc., Chester, Pa. Two catalogues, each 6 x 9 in., 19 pages. One is devoted to the Williams vertical compound medium speed engine, and is illustrated with a general view of the engine and front and end sectional elevations. Particular stress is laid on the low steam consumption. The standard engines of this type are made in sizes up to 27 and 60 x 38 in. The other catalogue treats of the Williams Monogram vertical duplex compound engine and is similarly illustrated.

Automobiles.—Stevens-Duryea Company, Chicopee Falls, Mass. Catalogue, 6 x 9 in., 31 pages. Concerns the Model X four-cylinder touring car, illustrating the assembled machine and parts, and containing a graphic description.

Engines and Machinery.—Central Foundry & Machine Company, successor to the High Point Machine Company, High Point, N. C. Circulars. Shows a counterbalanced center-crank engine particularly adapted for small electric light plants, planing mill, woodworking plants, cotton gins, &c., which is made in standard sizes up to 65 hp., with a 12 x 16 in. cylinder; woodworking machinery, including sawmills, box makers' cut-off saws, a miter saw, wood frame rip saw, emery grinders, bobbin lathes, &c. The company makes a general line of special equipment and is in a position to manufacture centrifugal pumps and similar equipment. Castings, such as boiler fronts and grate bars, truck wheels, &c., are also shown.

Cupolas and Molding Machines.—J. De Clercy, 62 Ontario street, West Montreal, Canada. Catalogue and booklet. The first treats of the Baillot cupola and gas recuperators for foundries, which are illustrated and briefly described, and the booklet is largely given to a description of molding machines made by the A. Baillot Company, Paris, France, for which J. De Clercy is the American agent.

Expanded Metal.—Northwestern Expanded Metal Company, 350 Old Colony Building, Chicago, Ill. Booklet—"Expanded Metal Information." Contains suggestions as aids to the compiling of specifications for reinforced concrete structures and refers to the advantages of Northwestern expanded metal reinforcing.

Enameling Furnaces.—Rockwell Furnace Company, New York. Folder. Illustrates the company's standard enameling furnace, built without a muffler and using oil or gas as fuel. The furnace is fired intermittently, the temperature being raised by firing while the work is being placed on the charger and turned off while the material is being enameled, the heat being under the easy control of the operator. Sectional views are shown, together with a chart recording the heat obtained in a standard furnace.

Positive Pressure Blowers.—P. H. & F. M. Roots Company, Connersville, Ind. Catalogue, 7½ x 10 in., 41 pages. The Roots smelting and high pressure blower is illustrated by a cross sectional view and views of the head plate and bearings. A flexible coupling driving a 300-cu. ft. smelting blower is illustrated, as well as engine driven blowers and parts. Several views of large blower illustrations are shown, including two views of the largest rotary blower in the world, which has a capacity of 400 cu. ft. per rev., and is installed at the plant of the United Verde Copper Company at Jerome, Ariz. Descriptive matter explaining the construction of the company's blowers is included, together with charts showing the air velocity, air distribution, friction losses, &c., of standard blowers.

Fan Blowers.—American Blower Company, Detroit, Mich. Catalogue, 7 x 9 in., 50 pages. Devoted to blowers for railroad use. Equipment adaptable for heating and ventilating roundhouses and ventilating car shops and barns, power stations, depots and office buildings, tunnels and subways are shown in operation in various railroad plants throughout the country. Interesting views of equipment installed in the East Boston tunnel and in the Manhattan Subway are shown. The book is well illustrated and the text describing the various installations interesting.

Portable Cranes and Hoists.—Dale Engine & Supply Company, Franklin, Pa. Folder. Gives price-lists and brief descriptions of the Dale portable crane and hoist, which is made in standard sizes up to 2½ tons capacity.

Friction Clutches.—Dodge Mfg. Company, Mishawaka, Ind. Bulletin No. 116. Shows the Dodge split clutch assembled and a sectional view of it; also the clutch in combination with an iron split pulley, a wood split pulley and a spur gear. Unassembled parts of the clutch are shown and views are given of plants where the clutch is in use.

Steel Shafting.—Bliss & Laughlin, Harvey, Ill. Price-list in booklet form, giving prices and terms for the company's line of steel castings, roller bearing rods, cold drawn steel, &c.

Coal Handling Machinery, Conveyors, Industrial Railroads, &c.—C. H. Hunt Company, West New Brighton, N. Y. Pamphlet No. 081, 48 pages. Contains numerous miniature views of steeple towers, overhead bridges for coal storage plants, freight handling cranes, coal elevators, cable railroads, automatic railroads, steam hoisting engines, electric hoists, steam shovels and like equipment, among which is an interesting view of the arrangement of coal handling machinery for the Baltimore Boiler Works. Some space is devoted to industrial railroads, illustrating the Hunt patent flexible running gear so arranged that the axle takes a radial position and the cars easily run around a curve of 12 ft. rdius. A narrow gauge electric locomotive equipped with a storage battery is also illustrated, and a number of views of power stations and gas works, coal handling and railroad installations.

Gauges.—American Steam Gauge & Mfg. Company, Boston, Mass. Catalogue, 6 x 9¼ in., 125 pages. Illustrates the company's complete line of gauges for all purposes where gauges are required, with ample text matter explaining their construction and price-lists. Space is given to pump and test gauges, dead weight test gauges, portable test pumps, gas proving pumps and gauges, hydro gas test pumps, steam boiler inspectors' outfits, speed indicators, chime whistles, combination gauge cocks, &c.

Turret Tool Holder.—Baush Machine Tool Company, Springfield, Mass. Folder. Shows the Bocorselski's turret tool holder, which is made in three sizes and two styles, one style adaptable for the vertical and one for the horizontal position of the turret.

Switchboard Panels.—The General Electric Company, Schenectady, N. Y. Bulletin No. 4610. Describes a new line of small plant continuous current switchboard panels. These boards are manufactured for 125 and 250 volt circuits only, and each panel forms a separate and complete switchboard not intended for combination with other panels.

Crushing Machinery.—Sturtevant Mill Company, Boston, Mass. An eight-page leaflet 3¾ x 8½ in. Illustrates various types of rock breakers and balanced crushing rolls, also the Newaygo separator, dry screen and wet screen.

Electrical Wire.—Duplex Metals Company, 208 Fifth avenue, New York. Pamphlet, 6 x 8 in. Describes Monnot copper clad wire, with tables of gauges, weights, breaking weights and resistances.

Spiral Riveted Pipe.—American Spiral Pipe Works, P. O. Box 485, Chicago, Ill. Pamphlet No. 22. Shows several installations of the company's spiral pipe, including a line of a specially heavy pipe under 220 lb. working pressure running the water wheel of a hydro-electric power plant. Installations of pipe for use as water mains and for dredging, filling and delivering sand and gravel, as well as exhaust pipes for power plants are illustrated. Sectional views of the pipe are shown, together with illustrations of steel flanges and elbows.

Engines, Traction and Agricultural.—M. Rumely Company, La Porte, Ind. "Rumely Annual, 1908," devoted to the Rumely engines and threshing machinery, now in their 56th year. Special features of the threshing and plowing engines illustrated fully, also the Rumely threshing machinery.

The Girod Electrical Steel Process.—C. W. Leavitt & Co., 220 Broadway, New York. Illustrated pamphlet descriptive of the Paul Girod process for the manufacture of steel, which is in operation at Ugine, in the Department of Savoy, France. Drawings and estimates of cost of operation and of cost of installation are presented, and a strong indorsement is presented by Prof. W. Borchers, the well-known metallurgist of the Technical High School at Aix-la-Chapelle.

Carborundun.—Carborundum Company, Niagara Falls, N. Y. Catalogue No. 5, 126 pages, 6½ x 9 in. Fully illustrates and describes methods of manufacturing carborundum grinding wheels and gives sections and sizes of wheels for roll grinding, knife grinding and tool grinding; for universal plain cylindrical grinding machines; for surface, face and ring grinders; for twist drill grinding machines; car wheel, car box and locomotive guide bar grinding machines, &c. Tables are given of grits and grades of wheels for different kinds of grinding; also data as to characteristics of grinding wheels, safety of wheels, &c. Carborundum refractories for metallurgical use are referred to, also the use of carbide of silicon in open hearth practice. The latter is supplied in the form of powder containing 62 per cent. available silicon and is added directly to the ladle during the process of tapping.

Industrial Railroads.—Ernst Wiener Company, 66-68 Broad street, New York. Folder illustrating flat platform car, portable track and all-steel double-side dump car. Catalogue 117, referred to in the folder, will be sent on request.

Water Purifiers.—Purification & Engineering Company, 50 Church street, New York, successor to Hans Reisert Company, Ltd. Thirty-two-page pamphlet, with 23 illustrations, entitled "H_2O." Describes various types of automatic water purifiers. Type B, the one most used in the United States, consists mainly of a distributing tank with lime slacking division and soda regulator, lime separator, settling tank with mixing pipe and gravel filter. Of the Reisert-Dervaux pattern more than 3500 plants with an aggregate capacity of 11,925,000 gal. per hour are in operation. Last year 312 plants were installed, with a capacity of 1,590,000 gal. per hour.

Gas and Gasoline Engines.—Olney & Warren, 66-68 Centre street, New York. Leaflet describing the company's gas and gasoline engines, which are built in sizes from 3 to 100 hp. and fitted for the use of gas or gasoline interchangeably. The 3-hp. engine weighs 700 lb. and the 50-hp. engine 14,000 lb.

NEWS OF THE WORKS.

Iron and Steel.

Florence Furnace of the Sloss-Sheffield Steel & Iron Company, Florence, Ala., was put in operation this week.

The United Engineering & Foundry Company, Pittsburgh, has shipped and practically completed the installation of the new rail mill in the Indiana Steel Company's plant at Gary, Ind. The billet mill equipment is now going forward and being erected.

Furnace A of the Buffalo Union Furnace Company, Buffalo, N. Y., was blown out August 23.

The Brown-Bonnell plant of the Republic Iron & Steel Company, at Youngstown, Ohio, started up last week to nearly full capacity.

General Machinery.

The Pioneer Iron Works, Antigo, Wis., hitherto owned and operated by W. S. Morgan, has been incorporated with a capital stock of $20,000 under the title of the Pioneer Iron Works Company. The business, which has heretofore been largely of a local nature, will be extended to include the manufacture of gasoline engines, log loaders, sawmill machinery and the Morgan auxiliary mixers for automobiles. The officers of the company are W. S. Morgan, president; E. Horn, vice-president; M. L. Meyer, secretary and manager; O. P. Walch, treasurer.

The Parkersburg Machine Company has bought at public auction the plant of the United States Engine Works at Parkersburg, W. Va., the price being $20,000.

H. S. Palmer, representing mill and mine machinery and supplies, has opened an office in the Federal Title & Trust Company Building, Beaver Falls, Pa.

The Pittsburgh Conveying Machine Company, Pittsburgh, is building for export shipment a large rotary dryer for drying wet materials. The contract was placed through a New York engineering firm.

The Atchison, Topeka & Santa Fe Railroad has decided to complete its new shops at Chanute, Kan., work on which was stopped last fall owing to the depression in business.

Power Plant Equipment.

J. E. Whittelsey, Fulton Building, Pittsburgh, resident agent for the Heine Safety Boiler Company, reports sales of Heine safety water tube boilers as follows: 1000-hp. for the Fort Pitt Hotel, Pittsburgh; one 360-hp. for the Victor Rubber Company, Springfield, Ohio; two 150-hp. for the Williamson Building, Cleveland; three 300-hp. for the Post Office Building, Cleveland, Ohio; three 300-hp. for the Kelly Axe & Tool Company, Charleston, W. Va.; 290 hp. for a sand lime brick concern at Michigan City, Ind.; a large boiler for the Wilberforce University, at Wilberforce, Ohio; 300 hp. for the Ward-Mackey Company, Pittsburgh, and two 400-hp. for the Citizens' Railway & Light Company at Fort Worth, Texas. Mr. Whittelsey has made other smaller sales and reports the outlook for boiler installation as very good.

The Board of Directors of the Pennsylvania Power Company, Ellwood City, Pa., has decided to purchase a 500 kw. steam turbo generator in connection with the rebuilding of the company's plant, recently destroyed by fire.

During August, the Westinghouse Machine Company, East Pittsburgh, received orders for steam turbines of large sized units from the Capital Traction Company, Washington, D. C., for a turbine of 4500 hp., to be added to two recently ordered turbines of 2500 hp. each. The Black Hill Traction Company, Deadwood, S. D., has ordered a 750 hp. turbine, with an outfit complete; Goodrich Rubber Company, Akron, Ohio, a fourth turbine of 1800 hp.; Jacksonville Oil & Mill Company, Jacksonville, Ala., 450 hp. turbine, with a Leblanc condenser, and the Brown Gas & Electric Company, Westchester, N. Y., 1000 hp. turbine.

Van Houten Brothers, Fishkill Landing, N. Y., have purchased property on the south side of Academy street and will soon start construction of a plant for supplying commercial power to a number of plants, the principal of which will be the Dutchess Tool Company, who will change over its entire plant and equip it with motor drive. The company is at present using some motors, but is also operating a steam plant which will eventually be done away with. It is expected that several other manufacturing plants in the vicinity will also change their plants over to motor drive in the near future.

The Delaware & Hudson Company, Albany, N. Y., is planning to install an electric generating station in connection with its general office building. The plant will probably be installed in duplicate and consist of either high speed engines direct connected to generators, or steam turbine units. The present boiler capacity is not sufficient to care for the above, so the installation will include boilers, pumps and other accessories in addition to the generating units. Details as to equipment have not yet been fully determined.

The Rosedale Foundry & Machine Company, engineer and founder, N. S., Pittsburgh, has received an order for three Playford chain grate stokers for the Massillon State Hospital, Massillon, Ohio, and for two sets for the Black Hills Traction Company, Deadwood, S. D. This company furnished the stokers in the Auditorium Hotel, Chicago, which are being electrically operated.

The town of North Birmingham, Ala., will build a water and light plant to furnish the city of Greater Birmingham, Ala., of which North Birmingham becomes a part in 1909, with water and electric lights, construction of which will in all probability be begun in January of next year. The water plant will supply 30,000,000 gal. of water per day and the light plant 20,000 kw. Both plants will be operated by water power, and the site upon which they are to be erected is about 30 miles from Birmingham. W. C. Harkins is clerk and treasurer of North Birmingham.

Bridges and Buildings.

Bids will be opened by the commissioners of Washington County, Pa., on September 10, in the office of the controller of Allegheny County, in Pittsburgh, for the erection of a steel bridge across the Monongahela River at Monongahela, Pa. There will be three spans of 455 ft. each, supported by two concrete abutments and two stone river piers. The superstructure will require 1850 tons of steel.

The Chester B. Albree Iron Works Company, N. S., Pittsburgh, manufacturer of ornamental iron work, riveting machines, &c., recently received a contract from the American Bridge Company for about 4000 ft. of double angle lattice railing for two bridges at Nashville, Tenn. The company is also completing a contract for the city of Pittsburgh for about 2000 ft. of its four-legged type of iron benches and for 300 swings made of angle iron, for use in the city parks.

N. D. Yant & Co., N. S., Pittsburgh, Pa., fabricators of structural steel and manufacturers of welded annealing boxes for sheet and tin plate, have received a contract for furnishing the steel required in the new seven-story steel and brick building, 30 x 100 ft., being erected by J. W. Houston & Co. at Fourteenth street and Liberty avenue, Pittsburgh, for warehouse purposes. This firm is also supplying the steel for a small two-story addition to the tool room of the McKinney Mfg. Company, N. S., Pittsburgh.

Fires.

A loss reported to amount to $300,000 was suffered August 23 by the Wheeling & Lake Erie Railroad at Norwalk, Ohio, by the destruction of the big general repair shops and the boiler shops. B. A. Worthington, receiver for the Wheeling & Lake Erie, has been planning a new system of shops for the road, to cost $1,800,000 and to be located at Brewster, Ohio. Efforts are now being made by the Chamber of Commerce of Norwalk to have these shops located at Norwalk to replace those just destroyed.

The main factory of Mason & Parlser, Winchendon, Mass., manufacturers of woodenware and hardware, and a branch of the Hardware & Woodenware Company, was burned August 23, with a loss of $25,000.

The plant of the Canadian Packing Company at Pottersburg, a suburb of London, Ont., was burned August 30, the loss being about $100,000.

Miscellaneous.

The Ruud Mfg. Company, Twenty-ninth and Liberty street, Pittsburgh, manufacturer of the Ruud instantaneous water heaters, has recently opened a branch office at 812 Equitable Building, Baltimore, Md., in charge of M. W. Mullin.

The Pittsburgh Water Heater Company, River avenue, N. S., Pittsburgh, Pa., manufacturer of Lion and Pittsburgh water heaters, announces that it will shortly place on the market Lion heaters with triple copper coils for use with tanks, having 40 to 60 gal. capacity. This is the first concern to manufacture this type, for which it claims a larger heating surface and greater efficiency. It recently made a carload shipment of heaters to San Francisco, Cal.

The White Boiler Feed Regulator Company has been incorporated with a capital stock of $25,000 to manufacture an apparatus, the invention of O. O. White, to be attached to boilers for the purpose of maintaining the gauge of water uniformly at any point desired, and a gas cut off and regulator, the latter a safety device to prevent the shutting off or loss of pressure. An office will be established at Warren, Pa. The incorporators are Martin L. Amann and George B. Munn, of Warren, and George H. Boten, Jamestown, N. Y.

Operations will be resumed this week at the car works of the Alabama Great Southern Railway at Gadsden, Ala.

D. J. Sinclair, Steubenville, Ohio, advises us he is not interested in a proposed plant to be located in Follansbee, W. Va., to manufacture steel tanks.

The American Shipbuilding Company will build a dry dock at its Buffalo plant, to be 630 ft. long, 100 ft. wide at the top and 75 ft. at the bottom. It will be built on the site of the present docks Nos. 2 and 3 and will cost $300,000. Plans for the work were prepared by A. V. Powell, engineer, Chicago. The company will also lengthen its small dock at Superior 100 ft., making it 610 ft. long by 65 ft. wide, at a cost of $100,000. The contract has been let to the Barnett & Record Company, Duluth.

W. W. Dutton Company, marble works, Schenectady, N. Y., will soon erect a new building to be used as a cutting and polishing room and also as a blacksmith shop.

The Iron and Metal Trades

The collapse of the strike of the coal miners in the Birmingham District will make it probable that some of the furnace companies will blow in stacks which have been ready. In the next 10 days two companies will start three furnaces. While the strike did not interfere with current production, it did have the effect of preventing an increase.

In the East the number of Pig Iron manufacturers who were willing to make concessions has narrowed down so much that the market has stiffened and higher prices are being realized. This is notably the case in Forge Iron, and is true also of Foundry. In Basic Pig Iron, in the East, makers have advanced their asking prices, but as yet buyers have not met them.

Foreign Ferromanganese is weaker, and some larger transactions lately have established a lower level of values. Foreign Ferro is now being offered at seaboard for $43.

In the semifinished and finished lines the position of one of the leading producers is interesting, as reflecting underlying conditions. A comparatively large part of the output is of lines whose ultimate outlet is for the agricultural requirements. On September 1 the commitments of this company were slightly over 300,000 tons, while on September 1, 1907, they were slightly under that figure. In other words, there was an actual although a slight gain this year over last year. The result is that the management has decided to go no further in booking season contracts and other back log business, and to sell conservatively in the expectation of securing a better range of prices. The general consumption of Iron and Steel is better than is usually figured, since the low requirements of the railroads drag the general average down.

The works are slowly gaining in employment. So far as the Steel Corporation is concerned, this is best measured by the blast furnace capacity in operation, which has now reached 59 per cent. Some of the other large interests are in a better position, while others who have been lagging behind have been getting into more comfortable shape and are expected to be less urgent sellers.

Some orders have come to the car builders and others are in sight, among them about 1500 cars for the Steel Corporation. Figuring is going on for some boats for outside Lake shipping companies.

There has been a fair run of moderate sized orders for Structural Material, among them 2400 tons for the Oakdale, Pa., bridge, 1600 tons for the First National Bank at Pittsburgh, and 1300 tons for a wharf at San Francisco. A lot of 450 tons of structural work has been placed for track elevation at Buffalo, with 3500 more ready for bids. It is expected that out of the 30,000 tons to be placed for the Northwestern station at Chicago, about 12,000 tons will be let at an early date. At Pittsburgh bids will be soon opened for the Monongahela bridge, requiring about 2700 tons.

Specifications are being received in satisfactory volume by the Steel Bar mills, and the Wire trade continues to send good reports. A Pittsburgh mill has just secured the contract for 35 miles of 18-in. Line Pipe.

In the East and in the West there has been an advance in Old Material, under moderate transactions.

The Brass industry is getting into considerably better shape, and business in Sheet Copper is now nearly normal. It is the slackness in the Wire trade and the danger of an increase in the production which is clouding the future of Copper.

A fact worthy of keeping in mind is that the visible supply of Pig Tin is the largest since November, 1902.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Sept. 2, 1908.	Aug. 26, 1908.	Aug. 5, 1908.	Sept. 4, 1907.
PIG IRON, Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	$16.50	$16.50	$16.50	$21.00
Foundry No. 2, Southern, Cincinnati	**15.50**	15.50	15.00	21.75
Foundry No. 2, Local, Chicago	17.00	17.00	17.00	24.50
Basic, delivered Eastern Pa.	**15.25**	15.00	15.00	19.50
Basic, Valley Furnace	*14.50*	14.50	15.00	21.00
Bessemer, Pittsburgh	*15.90*	15.90	16.40	22.90
Gray Forge, Pittsburgh	*14.65*	14.65	14.90	21.40
Lake Superior Charcoal, Chicago	19.50	19.50	19.50	27.00
BILLETS, &c., Per Gross Ton:				
Bessemer Billets, Pittsburgh	25.00	25.00	25.00	29.00
Forging Billets, Pittsburgh	27.00	27.00	27.00	33.00
Open Hearth Billets, Phila.	26.20	26.20	26.20	31.50
Wire Rods, Pittsburgh	33.00	33.00	33.00	36.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel Rails, Melting, Chicago	**15.00**	14.25	13.50	17.00
Steel Rails, Melting, Phila.	**15.25**	14.50	14.50	16.75
Iron Rails, Chicago	**16.75**	16.75	16.50	20.25
Iron Rails, Philadelphia	**20.00**	20.00	19.00	20.50
Car Wheels, Chicago	**16.00**	16.00	15.00	24.50
Car Wheels, Philadelphia	**15.00**	15.00	14.50	23.00
Heavy Steel Scrap, Pittsburgh	*14.25*	14.50	14.75	17.75
Heavy Steel Scrap, Chicago	**13.00**	13.00	12.50	14.75
Heavy Steel Scrap, Phila.	**15.25**	14.50	14.50	16.50
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia	**1.45**	1.40	1.40	1.85
Common Iron Bars, Chicago	1.50	1.50	1.50	1.78
Common Iron Bars, Pittsburgh	1.40	1.40	1.40	1.70
Steel Bars, Tidewater, New York	1.56	1.56	1.56	1.86
Steel Bars, Pittsburgh	1.40	1.40	1.40	1.60
Tank Plates, Tidewater, New York	1.76	1.76	1.76	1.86
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.70
Beams, Tidewater, New York	1.76	1.76	1.76	1.86
Beams, Pittsburgh	1.60	1.60	1.60	1.70
Angles, Tidewater, New York	1.76	1.76	1.76	1.86
Angles, Pittsburgh	1.60	1.60	1.60	1.70
Skelp, Grooved Steel, Pittsburgh	1.45	1.45	1.45	1.85
Skelp, Sheared Steel, Pittsburgh	1.50	1.50	1.50	1.95
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	2.40	2.40	2.40	2.50
Wire Nails, Pittsburgh	1.95	1.95	1.95	2.05
Cut Nails, Pittsburgh	**1.80**	1.80	1.75	2.10
Barb Wire, Galv., Pittsburgh	2.40	2.40	2.40	2.50
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	**13.87½**	13.62½	13.60	18.12½
Electrolytic Copper, New York	**13.75**	13.50	13.50	17.50
Spelter, New York	*4.75*	4.65	4.80	5.50
Spelter, St. Louis	*4.60*	4.50	4.70	5.37½
Lead, New York	*4.57½*	4.57½	4.60	5.12½
Lead, St. Louis	4.45	4.40	4.45	4.95
Tin, New York	*29.60*	29.25	30.70	37.12½
Antimony, Hallett, New York	8.00	8.00	8.00	9.00
Nickel, New York	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York	$3.89	$3.89	$3.89	$4.09

Chicago.

FISHER BUILDING, September 2, 1908.—(*By Telegraph.*)

The strongest feature of encouragement to be found in commercial and industrial developments as represented in the Iron and Steel market is that the general tendency continues forward rather than backward. Improvement in some degree is reported in nearly all mill products, but is especially pronounced in Wire and Wire Nails, which are considerably in advance of all other lines. The agricultural demand for such products has been strengthened by a successful issue of matured and the promising prospects of maturing crops. The same influence is prompting the implement makers to specify more freely against their Steel Bar contracts, the tonnage of which is quite satisfactory. While most of the Bar mills are in operation, there is room for a considerable increase in capacity, which would be fully supplied if shipments against contracts were asked for in normal volume. That the railroads are not yet ready to come into the market in an aggressive manner is evident from the absence of new Rail orders or large purchases of other material. It is a fact, however, that they are being compelled to increase their purchases of general supplies, as is indicated by the improvement noted in orders for Bolts, Spikes and Track Supplies. Business in Light Rails is better and prices are somewhat firmer. A feature in Structural Material is the large number of miscellaneous contracts being closed. While these do not run into large tonnage they are significant of the improvements that are going throughout the country. The largest project involving the use of Structural Material now nearing the contract

stage is that of the Chicago & Northwestern Depot, which, together with approaches and sheds, will require about 42,000 tons. It is expected that bids on a considerable portion of this will be asked for within a few days. Some headway is being made in Plates and Sheets as the result of a slow increase in the general demand. The Scrap Iron market continues strong and more material is being taken by the consuming interests. Anticipating fuller operation of their plants in the fall and winter months, some of the local mills have been accumulating stocks of Scrap, and both Steel and Iron foundries have been buying more liberally. The Pig Iron market has developed nothing of special interest either in prices or volume. With present wants of consumers well supplied and both buyers and sellers reluctant to negotiate for deliveries extending into next year, what little business there is moving relates to small routine and emergency orders.

Pig Iron.—The market for the past week has been without a semblance of activity, transactions being confined almost wholly to small business for nearby requirements. The foundry melt seems to be increasing slightly, but the gain is not sufficient to take care of Iron coming in on contract shipments. At the present rate of consumption it is estimated that the requirements of the trade generally are pretty well provided for through the remainder of the year, but the purchases of melters, both large and small, have been made on a conservative basis, and in the event of a marked increase in consumption would doubtless fall short of covering last quarter needs. What effect the reported ending of the coal miners' strike will have upon the Southern situation is not yet apparent, but it at least removes an element of uncertainty in the figuring of future contracts. Quite a number of inquiries for deliveries extending through the first quarter and half of the next year are coming into the market, but very few are of a character that indicates a firm purpose to buy at this time. No large amounts of Iron of any grade are up for consideration, and with possibly one or two exceptions the heavy consumers in this district are believed to be pretty well covered up to the first of the year. While the leading Southern producers are now asking $13, Birmingham, for No. 2 Foundry, there are still sellers in that territory at $12.50 for this year's delivery, and one furnace interest is quoting $13 for first quarter. The advance in Southern Iron has brought it near to a parity with Northern Iron, which continues to be held at about $17 at furnace, though this price cannot be realized on competitive business, since Mahoning and Shenango Valley Irons are available at $16.90, Chicago. No sales of importance are reported, but one lot of 100 tons of Southern Iron was taken at $13, Birmingham. Until buyers and sellers get together on first quarter business and buying for that period begins tonnage it is the general opinion that the market will develop no features of special interest. The following quotations are for September delivery, f.o.b. Chicago:

Lake Superior Charcoal	$19.50 to $20.00
Northern Coke Foundry, No. 1	17.50 to 18.00
Northern Coke Foundry, No. 2	17.00 to 17.50
Northern Coke Foundry, No. 3	16.50 to 17.00
Northern Scotch, No. 1	18.00 to 18.50
Southern Coke, No. 1	17.35 to 17.85
Southern Coke, No. 2	16.85 to 17.35
Southern Coke, No. 3	16.35 to 16.85
Southern Coke, No. 4	15.85 to 16.35
Southern Coke, No. 1 Soft	17.35 to 17.85
Southern Coke, No. 2 Soft	16.85 to 17.35
Southern Gray Forge	15.35 to 15.85
Southern Mottled	15.10 to 15.60
Malleable Bessemer	17.50 to 18.00
Standard Bessemer	18.40 to 18.90
Jackson Co. and Kentucky Silvery, 6 %	20.40 to 20.90
Jackson Co. and Kentucky Silvery, 8 %	21.40 to 21.90
Jackson Co. and Kentucky Silvery, 10 %	23.40 to 23.90

(By Mail.)

Billets and Rods.—The demand for Forging Billets continues scant and is confined to scattering orders of small tonnage. Specifications against existing contracts are only fair. The regular price of $28.50, base, Chicago, is reported to be maintained with reasonable firmness. The improved demand for wire products is reflected in a better movement of Wire Rods, on which we quote as follows: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

Rails and Track Supplies.—Business in Standard Section Rails is chiefly miscellaneous orders placed by the smaller roads for prompt shipment. Orders of this kind aggregating 2000 tons were taken by the leading interest the past week. None of the contemplated purchases of heavy tonnage recently talked of for 1909 delivery has been made. The showing made in Light Rails in August is better than for any previous month of the year, and, all things considered, is quite encouraging. Regular prices of Light Rails are herewith revised on a basis of $2 a ton lower than former quotations. Competition from rerolling mills makes it difficult to maintain the revised schedule, and even these prices are being shaded at least $1 a ton. Definite improvement is noted in Track Bolts, Spikes and Track Supplies, orders for which are gradually increasing in size and number. Bookings for the past week include several orders for Track Bolts, ranging from 500 to 1000 kegs, the total exceeding the mill capacity of the leading producer for the corresponding period. Track Bolt prices have declined 10c. per 100 lb. and are revised accordingly. An order for 220 tons of open hearth high T Girder Rails placed by a street railroad system was secured by the Pennsylvania Steel Company. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.10c. to 2.15c., base, Square Nuts, and 2.25c. to 2.30c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard Sections, $28, f.o.b. mill, full freight to destination.

Structural Material.—In point of tonnage placed, the past week has developed nothing of particular significance, though quite a number of small orders for miscellaneous requirements have been secured by the fabricators. Specifications on existing contracts are being furnished a little more freely, and mill conditions are correspondingly improved. Among the projects involving considerable tonnage promising early development is that of the new Northwestern Depot, which will require about 12,000 tons. It is expected that plans of this structure will be submitted this week to fabricators for bids. For the approaches, train sheds, and other outside work necessary for the completion of this structure, 30,000 tons additional will be used, and contracts for at least a portion of this tonnage will also be let in the near future. The contracts for a three-span bridge, to be erected by the Midland Valley Railroad Company, near Muscogee, Indian Territory, amounting to 900 tons, was secured by the Pennsylvania Steel Company. The bookings of the American Bridge Company have been considerably augmented by fabricated material for structural work under way at the Steel Corporation plants at Gary, Ind., and elsewhere. Included therein is a lot of 8000 tons for Steel Ore dock construction at Duluth. While improvement is reported in the general volume of business, prices ruling on fabricated material continue at a level which would in many instances seem to preclude the possibility of profit based upon regular mill prices for Structural Shapes. The South Works structural mill of the Illinois Steel Company is in operation this week. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

Plates.—The volume of business in Plates is slowly increasing, and orders are being received from sources which have not figured in the market for some time. The warehouse interests find a better demand for shipments from stock which are particularly available for prompt requirements. Concessions of $1 to $1.50 from regular prices continue to be made by some mills, and are not as closely confined to narrow sizes as has been the case for some time. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

Sheets.—Business in Black and Galvanized Sheets, both in light and heavy gauges, is gradually increasing. Jobbers are ordering more liberally for the replenishment of stocks, and manufacturers seem less disposed to restrict their purchases as closely to actual present needs as they have been doing. The principal local jobbers note a gratifying increase in shipments from stock, and the demand for prompt shipment from both store and mill is significant of the meager supply of material in the hands of manufacturers and dealers. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

Bars.—In no department of mill material is improvement more marked than in Steel Bars, specifications for which are coming out well. An encouraging feature of the movement is that not only the implement makers, but other interests more or less closely related to the railroads are

beginning to ask for shipments against their contracts. All of the Western mills of the Republic Iron & Steel Company are going this week, though none is operating at full capacity. The remaining Bar mills in this district are likewise active, with good prospects of an increased output in the near future. The growing activity in car repair work is reflected in a better demand for Iron Bars, which also finds support in larger orders from jobbers and manufacturing interests. Prices on Steel Bars are reported to be rigidly maintained, and no complaint of irregularity in Iron Bars is heard. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

Merchant Pipe.—August showed a continuance of the progressive gain in business, though the extent of improvement is short of what was hoped for. Trade in this market, comprising almost wholly ordinary Merchant Pipe requirements, reflects the general demand of smaller interests, and that this is gradually expanding is significant of sound underlying conditions. Frequent orders and demand for prompt shipments are features which continue to represent the conservatism of jobbers in maintaining moderate stocks. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

Boiler Tubes.—Necessary repairs on motive power equipment is compelling the railroads to increase their purchases of Locomotive Tubes, but only for imperative needs. The boiler shops are making slow progress toward normal activity and there is no notable growth in the mill demand for Merchant Tubes, although there is a slight increase in store shipments. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4½ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to 1½ in.	35	35	35
1¾ to 2¼ in.	50	35	35
2½ in.	52½	35	35
2¾ to 5 in.	60	47½	47½
6 in. and larger	50	35	..

Merchant Steel.—Business has fluctuated somewhat through the month of August, but, as with other Bar products, there is on the whole a net gain in volume. Some new business is still being placed, but interest is now centered mainly on specifications, which are being furnished with less reluctance, and in larger orders, as the fall work of implement and vehicle makers progresses. Shafting is dull and only small routine orders are heard of. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over, 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

Cast Iron Pipe.—Large requirements are conspicuous by their absence, and the market is supported principally by the lettings of small municipalities, whose purchases rarely exceed a few hundred tons. Several such transactions were concluded in the past week, the aggregate of which was around 3500 tons. One of the largest was 800 tons, on which bids were taken by Brainered, Minn., the United States Cast Iron Pipe & Foundry Company being the lowest bidder. Competitive conditions are not materially changed, except that there is, perhaps, a disposition on the part of founders to hold a little more firmly on general requirements. No important lots are reported as scheduled for letting in the near future. Prices are unchanged, which we quote nominally per net ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

Old Material.—Encouraged by freer buying by the consuming interests of both mill and melting stock, dealers maintain a confident attitude respecting prices. Sentiment, however, does not favor forcing prices to materially higher levels, though it is firm enough to maintain the market, with fractional advances on some grades. Steel Rails are in demand, as is also Railroad Wrought. Not much railroad material is being offered in the market, though several lists of good tonnage are expected within the next week or two. Stove Plate is scarce, and is strong, at an advance of 50c. a ton. Inquiries from both Iron and Steel melters are more plentiful, and these grades are moving better than for some time. Dealers report a decided improvement in the consuming demand, which is enabling them to move a fair amount of material at reasonable margins of profit. The only railroad list offered this week is one of 1500 tons from the Wisconsin Central. We quote, per gross ton, f.o.b. Chicago, as follows:

Old Iron Rails	$16.75 to $17.25
Old Steel Rails, rerolling	16.00 to 16.50
Old Steel Rails, less than 3 ft.	15.00 to 15.50
Relaying Rails, standard sections, subject to inspection	20.00 to 21.00
Old Car Wheels	16.00 to 16.50
Heavy Melting Steel Scrap	13.00 to 13.50
Frogs, Switches and Guards, cut apart	14.00 to 14.50
Mixed Steel	10.25 to 10.75

The following quotations are per net ton:

Iron Fish Plates	$16.00 to $16.50
Iron Car Axles	18.50 to 19.00
Steel Car Axles	17.50 to 18.00
No. 1 Railroad Wrought	13.25 to 13.75
No. 2 Railroad Wrought	12.25 to 12.75
Railway Springs	13.50 to 14.00
Locomotive Tires, smooth	13.25 to 13.75
No. 1 Dealers' Forge	10.25 to 10.75
Mixed Busheling	8.00 to 8.50
Iron Axle Turnings	6.75 to 7.25
Soft Steel Axle Turnings	6.75 to 7.25
Machine Shop Turnings	6.75 to 7.25
Cast Borings	5.75 to 6.25
Mixed Borings, &c.	5.75 to 6.25
No. 1 Mill	8.00 to 8.50
No. 2 Mill	7.00 to 7.50
No. 1 Boilers, cut to Sheets and Rings	9.50 to 10.00
No. 1 Cast Scrap	12.75 to 13.25
Stove Plate and Light Cast Scrap	12.00 to 12.50
Railroad Malleable	12.50 to 13.00
Agricultural Malleable	11.50 to 12.00
Pipes and Flues	9.75 to 10.25

Metals.—Following the buying spurt of two weeks ago trade suffered a reaction last week which halted the forward movement. Notwithstanding this, August as a whole produced a greater volume than any previous month this year. Inquiries are plentiful and are of a character that inspire hopes of renewed buying in the near future. Prices are holding with reasonable firmness at present levels. Quotations are as follows: Casting Copper, 13¾c.; Lake, 14c. to 14¼c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 32½c.; small lots, 34½c.; Lead, Desilverized, 4.65c. to 4.75c., for 50-ton lots; Corroding, 4.90c. to 5c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.80c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13¼c.; Heavy Copper, 13c.; Copper Bottoms, 10⅝c.; Copper Clips, 11c.; Red Brass, 11½c.; Yellow Brass, 9c.; Light Brass, 6½c.; Lead Pipe, 4c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

Philadelphia.

PHILADELPHIA, PA., September 1, 1908.

Notwithstanding that trade in Iron and Steel in this territory has been quieter, the situation continues strong. There is undoubtedly a gradual forward movement in many directions. Consumption on the part of the Iron foundries shows a betterment, and while the Steel melters have made no important increase in production, they have maintained former gains. There is a good volume of business pending in both Pig Iron and finished materials, and a more active buying movement is looked for about the middle of the month. The continued reduction in the number of idle freight cars, with some few orders placed by the railroads for new equipment and repair work, lends considerable encouragement to the trade. Crop reports continue favorable, and the aspect of trade in general is such as to bring forth quite a hopeful view of the future, although it is fully understood that a heavy increase in buying will be necessary before anything like normal conditions can be obtained.

Pig Iron.—The market continues strong, even though business during the week has been rather quiet. Statistically the situation is good. Orders in some few cases have been larger than current production, and stocks on hand show further decrease. Foundries are somewhat more actively engaged, and where the improvement heretofore has been spotty, it now appears, while small, to be more general. Producers in eastern Pennsylvania maintain, as far as deliveries for the balance of the year are concerned, a firm stand at to-day's level. For 1909 delivery, however, for which there has been considerable inquiry in both small and large lots, there is an element of uncertainty as to the best policy to pursue. In a number of instances sellers still refuse to quote for any delivery beyond the current year; in others, however, there is a willingness to do business at figures lower than were talked of some weeks ago, and moderate tonnages of 2 X Foundry Iron could, no doubt, be done for the first quarter at from $17.50 to $17.75, delivered. Buyers are in the same quandary as sellers in this respect, and in a good many instances hesitate to place orders, preferring to take chances on some further recession. Sales of Northern Foundry Iron for delivery in this territory have been

small, moderate orders ranging from carloads to those of a few hundred tons having made up the bulk of the business. The greater portion has been for delivery during September and October, at prices ranging from $16.50 to $16.75 for No. 2 X Foundry. Some little business has been done for fourth quarter delivery, but only in moderate amounts, at $16.75 to $17, delivered, for the same grade. Virginia Foundry Irons come in for a fair share of business. One interest reports sales of 1500 tons in the week, made up of small lots for local, New England and Western delivery, practically all prompt delivery, at full prices. One lot of 600 tons of No. 2 X for spot, New England shipment, was done at $18, delivered. A round tonnage of off grade Foundry was also sold by another Virginia interest to a Pipe foundry in that territory. There is quite a fair inquiry for forward Virginia Iron, but sellers as a rule still refuse to quote for next year's delivery. The only important sale of Southern Foundry Iron was of 1000 tons of Coke Car Wheel Iron for an Eastern concern on the basis of $12.50, Birmingham, for No. 2 Foundry. Many of the Southern furnaces, being pretty well covered as far as their production in the next four months is concerned, are naming $13, Birmingham, for fourth quarter delivery, which practically puts them out of the market in this territory. The Pipe foundries in this vicinity continue in the market for off grade Irons, but little is to be had. One concern has inquiries out for 1500 tons, but has not yet placed the business. There is still some quiet inquiry for Forge Iron, but sellers have orders for about all they can take care of, and although there has been no business placed, prices are easily 25c. higher, and some producers will not take business at current figures. Basic has been rather quiet; no sales have been made, although there has been some inquiry for moderate tonnages for prompt delivery. The market is firm and some sellers talk higher prices. Low Phosphorus is dull. Few inquiries are before the trade, but furnaces as a rule are pretty well sold up. In general, there is less tendency to make concessions and in some cases higher figures are asked, but not obtained. For delivery in buyers' yards, eastern Pennsylvania and nearby territory, the following range is quoted for September and October:

Eastern Pennsylvania, No. 2 X Foundry	$16.50 to $17.00
Eastern Pennsylvania, No. 2 Plain	16.00 to 16.50
Virginia, No. 2 X Foundry	17.00
Virginia, No. 2 Plain	16.50 to 16.75
Gray Forge	15.25 to 15.50
Basic	15.25 to 15.50
Low Phosphorus	20.50 to 21.00

Ferromanganese.—A little more inquiry is made for Ferro, both for delivery during the balance of this year as well as for shipment during the first half of 1909. Sales, however, have been light, but one lot, covering 250 tons for Western shipment at $43.50, Baltimore, being reported. Prices are hardly as strong as they were, prompt Ferro being quoted at $43.25 to $43.75, seaboard. For delivery during the first half of next year $43.50 to $44 is quoted, although some sellers still hold their former higher quotations.

Steel Billets.—The market is very dull; transactions have been very light, and for prompt shipment. Makers have no heavy orders on hand, and are not very favorably impressed with the outlook. Ordinary Rolling Steel, for delivery in this territory, is quoted at $26.20, with Forging Steel at $28.20, subject to the usual extras for high carbons and special sizes.

Plates.—Orders have not been so numerous as they were during the past few weeks, but still aggregate a fair tonnage. The demand covers a wide range, largely for prompt delivery. It is believed in the trade that more active buying will develop by the middle of the month. Quotations for delivery in this territory range as follows:

	Carloads. Cents.	Parts carload. Cents.
Tank, Bridge and Boat Steel	1.75	1.80
Flange or Boiler Steel	1.85	1.95
Commercial Firebox	1.95	2.00
Marine	2.15	2.20
Locomotive Firebox Steel	2.25	2.30

The above are base prices for ¼-in. and heavier. ing extras apply:	The follow- Extra per 100 lb.
3-16-in. thick	$0.10
Nos. 7 and 8, B. W. G.	.15
No. 9, B. W. G.	.25
Plates over 100 to 110 in.	.05
Plates over 110 to 115 in.	.10
Plates over 115 to 120 in.	.15
Plates over 120 to 125 in.	.25
Plates over 125 to 130 in.	.50
Plates over 130 in.	1.00

Structural Material.—The demand is not very heavy. Some fairly good sized propositions are under consideration, but current business is largely of a miscellaneous character. One Structural mill booked an order for 600 tons for a nearby building. Quotations continue unchanged, 1.75c. to 1.90c. being named, according to specification, for deliveries in this territory.

Sheets.—A falling off in business is to be noted, and some of the mills have not been as fully engaged as they were. For mill shipments the following range of prices is quoted, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

Bars.—While the immediate demand is not large, the market shows increased strength and prices for Refined Iron Bars have in a number of instances been advanced. Mills report fair specifications with a moderate amount of new business, the greater part for prompt shipment. Mills still continue to operate intermittently. Refined Iron Bars, for delivery in this territory are quoted at 1.45c. to 1.50c., with some few sellers holding at 1.55c. Steel Bars are quiet and are quoted at 1.55c., with Rerolled Bars at 1.50c., delivered in this territory.

Coke.—The demand for Coke shows but little change. Some small contracts for Foundry Coke continue to be made at ruling prices, for delivery during the balance of the year. Furnace Coke has not been active. Quotations are as follows, according to grade and analysis, Foundry Coke, $2.15 to $2.35, at ovens; Furnace Coke, $1.50 to $1.75, at ovens. For delivery in this territory the following range of prices is named:

Connellsville Furnace Coke	$3.65 to $3.90
Foundry Coke	4.30 to 4.50
Mountain Furnace Coke	3.25 to 3.50
Foundry Coke	3.90 to 4.10

Old Material.—The first movement of any consequence in the Scrap market for several weeks came last week, when a nearby Steel mill took 4000 tons of Heavy Melting Steel for delivery during the next three months at an average price of $15.25 delivered. Several other Steel mills are in the market, but still refuse to pay the prices dealers ask. Sales of other grades of Scrap have been rather more active and prices show a further advance. Choice No. 1 Railroad Wrought appears to be scarce, while a decidedly better demand is reported for Borings, Turnings and Machinery Cast. Nominal prices for deilvery in buyers' yards, Eastern Pennsylvania and adjoining territory, range about as follows:

No. 1 Steel Scrap and Crops	$15.25 to $15.75
Low Phosphorus	18.50 to 19.00
Old Steel Axles	21.00 to 21.50
Old Iron Axles	22.50 to 23.00
Old Iron Rails	20.00 to 20.50
Old Car Wheels	15.00 to 15.50
Choice No 1 R. R. Wrought	18.25 to 18.75
Machinery Cast	15.25 to 15.75
Railroad Malleable	13.50 to 14.00
Wrought Iron Pipe	14.00 to 14.50
New Bundled Sheets	12.50 to 13.00
No. 1 Forge Fire Scrap	12.00 to 12.50
No. 2 Light Iron	8.75 to 9.25
Wrought Turnings	11.50 to 12.00
Stove Plate	13.00 to 13.50
Cast Borings	10.75 to 11.25
Grate Bars	13.00 to 13.50

Pilling & Crane, formerly located in the Girard Trust Building, have completed the removal of their offices to the Real Estate Trust Building, southeast corner, Broad and Chestnut streets, Philadelphia, Pa.

Birmingham.

BIRMINGHAM, ALA., August 31, 1908.

Pig Iron.—The schedule of prices recently adopted for prompt deliveries has been advanced to $13, Birmingham, for No. 2 Foundry, and reports indicate the maintenance of such a basis, although the demand has been of rather a desultory nature. Among the sales reported, one of 1000 tons of analysis Forge Iron, shipment to commence immediately, is the largest consideration. This brought $12.50, Birmingham. Silicon was 1 per cent. and better, with correspondingly high manganese specified. A lot of 200 tons, silicon 3 to 4 per cent., recently sold at $13.50, and smaller quantities of Clifton high manganese Iron, with silicon above 3 per cent., brought $14 per ton. An effort to secure 300 tons of No. 2 for prompt shipment at $12.50 is known to have been unsuccessful, while 750 tons for delivery covering the remainder of the year, at $13 per ton, was refused by one large producer, who is considered practically out of the market for the remainder of the year by reason of the condition of its order books. Two other large interests are also considered out of the market, without indications of a change in the intended policy of limiting production to actual commitments. Some interest is shown by melters in 1909 requirements, but so far their inquiries have assumed definite form in but few cases. On a bona fide inquiry for 750 tons for the first quarter a quotation on basis of $14, Birmingham, for No. 2 Foundry was elicited, subject to immediate acceptance.

Cast Iron Pipe.—This market is practically without a feature. Minor orders for maintenance work and extensions by small municipalities continue to make up the business transacted, and while the outlook for larger contracts is good, a more active market is hardly expected within 60 days or longer. With the price of raw material apparently on a firm basis and the output of all plants being moved, it is generally conceded that bottom prices on this material have been reached, although a definite statement as to the present level of prices is not warranted. There has been a slight advance in quotations on Cast Iron Soil Pipe, resulting

from an improvement in the demand, but there is still some accumulation of stock that may be a factor later. On Water Pipe we quote as follows, per net ton, f.o.b. cars here: 4 in. to 6 in., $23; 8 in. to 12 in., $22; over 12 in., average, $21, with $1 per ton extra for Gas Pipe.

Old Material.—A fairly satisfactory tonnage is being moved and prices have not suffered. Among the transactions reported, one of approximately 900 tons of old car wheels is the most significant. A quantity of furnace Scrap has also been involved in recent transactions, at prices apparently satisfactory to all parties concerned. Dealers' asking prices are as follows, per gross ton, f.o.b. cars here:

Old Iron Rails	$14.50 to $15.00
Old Iron Axles	15.50 to 16.00
Old Steel Axles	13.00 to 13.50
No. 1 Railroad Wrought	13.00 to 13.50
No. 2 Railroad Wrought	10.50 to 11.00
No. 1 Country Wrought	11.00 to 11.50
No. 2 Country Wrought	9.50 to 10.00
No. 1 Machinery	10.50 to 11.00
No. 1 Steel	9.50 to 10.00
Wrought Pipe and Flues	8.50 to 9.00
Stove Plate and Light Cast	8.50 to 9.00
Cast Borings	5.00 to 5.50

Pittsburgh.

PARK BUILDING, September 2, 1908.—(*By Telegraph.*)

Pig Iron.—There is a fair amount of inquiry for Pig Iron, but sales are mostly in small lots, consumers not showing much desire to contract ahead, while, on the other hand, most furnaces are unwilling to sell Iron for future delivery at present low prices. A local concern that is going into the manufacturing of ingot molds is in the market for 1000 tons of Bessemer and 500 tons of No. 2 Foundry for September delivery. The Standard Sanitary Mfg. Company, which bought about 8000 tons of Northern and Southern Foundry Iron some time ago, has now bought 3500 tons of Northern No. 2 for November and December shipment—2000 tons for its Allegheny works from a furnace with an 80c. freight rate, at $14.50 at furnace, or $15.30 delivered, and 1500 tons from a Valley furnace for its New Brighton, Pa., works, at $14.50, at furnace, or $15.40, delivered. The Erie Malleable Company, Erie, Pa., has bought 5000 tons of Malleable Bessemer from the Perry Iron Company, at Erie, at $15, delivered at buyer's works. Several small lots of Bessemer have been sold at $15.10 to $15.25, Valley furnace. It is the belief that the prices of Pig Iron have about touched bottom and that any further marked declines are not likely. We quote Standard Bessemer at $15 to $15.25, Malleable Bessemer, Basic and No. 2 Foundry at $14.50 to $14.75, and Northern Forge at nominally $13.75, all at Valley furnace. A 90c. freight rate should be added for Pittsburgh delivery.

Steel.—The Carnegie Steel Company reports a sale of 3000 tons of Plate Slabs to an Eastern consumer at full prices, and we also note a sale by another interest of 6000 tons of Forging Blooms, for delivery over the next year, prices to be adjusted quarterly. It is said that full prices are being obtained in all cases on the small amount of new tonnage placed in Billets and Sheet and Tin Bars. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

Press reports as to orders being placed for Steel cars by the railroads are somewhat exaggerated. The actual facts are that the Chicago & Alton has placed 1000 Steel cars with the Standard Steel Car Company, which will likely be built at its new shops at East Hammond, Ind.; the Wisconsin Central has placed 2500 wooden cars with Haskell & Barker; the Delaware, Lackawanna & Western, 100 refrigerator cars, and the Standard Oil Company some tank cars. Inquiries for cars are in the market from other roads, including about 7000 for the Harriman interests, but these have not gone beyond the inquiry stage. General conditions in the Steel trade show no change, but it is to be noted that the large machinery concerns, such as United Engineering & Foundry, Mesta Machine and Pittsburgh Valve, Foundry & Construction, report that new work has fallen off as compared with two months ago. Business in Structural Materials is increasing, also in Pipe and Sheets, but the other lines are quiet. There is no improvement in Coke and demand for Scrap has fallen off, prices showing a decline.

Ferromanganese.—A sale is reported of 1000 tons of Ferro to a large Steel interest for balance of the year delivery, at $42.50, seaboard. The sale is not confirmed, and the price given is reported as to be slightly under the market. We quote 80 per cent. foreign Ferro for prompt delivery at $43 to $43.25, Baltimore, the freight rate to Pittsburgh being $1.95 a ton.

Ferrosilicon.—A sale of 50 tons for September and October delivery is reported on the basis of about $67, Pittsburgh. We quote 50 per cent. Ferrosilicon at $67.50 to $70, depending on deliveries and tonnage.

Muck Bar.—One or two small inquiries are in the market, but no actual sales have recently been made. We quote best grades of Muck Bar, made from all Pig Iron, at about $25, Pittsburgh.

Rods.—There is more inquiry, and more Rods are being actually sold than at any time for some months. Several good sized contracts for Chain Rods have recently been placed at $33, Pittsburgh. The market is firm, and we quote Bessemer Rods at $33, Basic, $34, and Chain Rods, $33, Pittsburgh.

Skelp.—A sale of 500 tons of Sheared Iron Skelp, wide sizes, is reported at about 1.75c., Pittsburgh. The market is quiet, and there is not much inquiry. We quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

Steel Rails.—No important contracts from the railroads are expected now for this year delivery. It is thought that some of the leading roads will be in the market, probably as early as October, with contracts for 1909 delivery. The Carnegie Steel Company received an order last week for 1000 tons of 70-lb. Rails for the Peruvian Railways, in Peru, S. A., and also sold about 2000 tons of Light Rails for domestic consumption. The three Rail mills of the Carnegie Steel Company at Edgar Thomson are in operation to about 35 per cent. of capacity. Prices on new Light Rails, which, however, continue to be shaded about $2 a ton by rerolling Rail mills, are as follows: $25 for 25 to 45 lb. sections, with $1 advance for 20 lb., $2 advance for 16 lb., and $3 advance for 12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

Plates.—The contract recently placed by the Pittsburgh Steamship Company, the Ore carrying interest of the Steel Corporation, with the American Shipbuilding Company for two Ore boats, will take about 7000 tons of Plates and small Shapes. If these are built at the Lorain yard of the American Shipbuilding Company the Plates will be furnished by the Carnegie Steel Company, but if they are built at the Western yards the Steel will be furnished by the Illinois Steel Company. Eight or ten other Ore vessels are being figured on, and it is believed some of them will be placed very soon. It is likely the 1000 Steel cars for the Chicago & Alton taken by the Standard Steel Car Company will be built at East Hammond, in which event the Plates and small Shapes, about 11,000 tons, will be furnished from South Chicago. If the cars are built at Butler, Pa., the Plates will be furnished by a Pittsburgh mill. The Standard Oil Company has placed a small order for tank cars, and it is reported that several of the railroads will soon be in the market with large inquiries for Steel cars. Demand for Plates from the general trade is fair, and the Homestead Steel Works of the Carnegie Steel Company has the best rolling schedule this week that it has had in some time. Some shading in prices in Plates is being done by two or three of the outside mills and on the narrower sizes, but this does not as a rule exceed $1.50 a ton. Regular prices are as follows: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 in. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

Gauges under ¼-in. to and including 3-16-in. Plates on thin edges	$0.10
Gauges under 3-16-in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
"A. B. M. A." and ordinary Firebox Steel Plates	.20
Still Bottom Steel	.30
Marine Steel	.40
Locomotive Firebox Steel	.50
Shell grade of Steel is abandoned.	
For widths over 100 in. up to 110 in	.05
For widths over 110 in. up to 115 in	.10
For widths over 115 in. up to 120 in	.15
For widths over 120 in. up to 125 in	.25
For widths over 125 in. up to 130 in	.50
For widths over 130 in	1.00

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

Structural Material.—Some good business has been placed in the past week and more is pending that is likely to be given out within a short time. In addition to the Harriman specification to the American Bridge Company for 4000 tons, the American Bridge Company has taken 4500 tons of bridge work for the Glendale cut off of the Long Island Railroad and 2400 tons for a county bridge at Oakmont, Pa. The bid on this latter bridge was $269,371.86.

The McClintic-Marshall Construction Company has taken 1300 tons of Steel for a San Francisco wharf shed, and the Pittsburgh Steel Construction Company has taken 1600 tons for the five-story bank building to be erected by the First National Bank, Fifth avenue and Wood street, this city. The foundation and walls of this structure will be strong enough to support 20 additional stories, should it be decided later on to add this number. The Pittsburgh Steel Construction Company will also erect the 25-story Oliver office building on Smithfield street, the Steel to be rolled by the Carnegie Steel Company and fabricated by the American Bridge Company. There is still much complaint over the low prices being made in fabricated and erected work, which in some cases seem to be below actual cost, if regular prices are paid for plain material, which seems doubtful. On Thursday, September 10, at 2 p.m., bids will be opened in the City Controller's office, Pittsburgh, for the erection of a Steel bridge across the Monongahela River, at Monongahela City, Pa., which will require 2700 tons. We quote, f.o.b. mill, Pittsburgh: I-Beams, H-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; Beams over 15 in., 1.70c., net; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees and Z-19, 3c., net; Checkered and Corrugated Plates, 3c., net.

Sheets.—The improved demand for Corrugated Sheets is the noticeable feature of the market, and we note an inquiry for about 400 tons from one of the bridge companies. The American Sheet & Tin Plate Company is operating about 65 per cent. of its Sheet mill capacity, but some of the independent Sheet mills are running to nearly full capacity and others to about one-half. Prices in the main are being observed, but there is some cutting on both Black and Galvanized Sheets for prompt shipment by a few mills, though not to exceed $2 a ton. For shipments from mill regular prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

Tin Plate.—Very little new business is being placed, shipments from the mills representing specifications against contracts placed in the early part of the year. The American Sheet & Tin Plate Company is decreasing its operations, having shut down the Sharon works last week, and is now operating to about 45 per cent. of capacity. Some cutting is being done in prices of Tin Plate, but as yet this is small and has not affected the market. We quote $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

Hoops and Bands.—There is practically no new buying and specifications against contracts are only fair, shipments by the mills being rather light. It is said regular prices are being maintained as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

Iron and Steel Bars.—Not much new business is being placed in either Iron or Steel Bars, but specifications against contracts for Steel Bars are improving, and shipments by the mills are getting heavier. The railroads as yet are not buyers of Bars to any extent and are not expected to place any heavy tonnage for some time yet. There is some little improvement in demand for Iron Bars, and the mills of Republic Iron & Steel Company and other makers of Iron Bars are operating to larger capacity than for some time. It is said that prices are being maintained. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

Merchant Steel.—The makers of Merchant Steel have agreed to allow implement makers and other consumers to contract for their requirements in Merchant Steel, aside from Steel Bars, up to January 1, 1909, instead of to October 1 only, as decided upon some time ago. In the case of Steel Bars, contracts were made in June for tonnages needed up to July 1, 1909. Specifications on contracts are improving, but current new tonnage is light. Prices on Shafting are still being shaded to some extent on the small amount of tonnage that is being placed. We quote: Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

Merchant Pipe.—Spang, Chalfant & Co., Inc., have taken a contract for 35 miles of 18-in. Line Pipe for a gas line, one of the largest orders placed for some time. New tonnage in Merchant Pipe is steadily increasing and August showed a slight gain over July. The Standard Oil Company has placed some heavy business in both gas and oil lines, which has gone to the leading interest. Prices on Steel Pipe are, on the whole, being maintained, but on Iron Pipe are being shaded to some extent. Discounts on Steel Pipe, ¾ to 6 in., to the large trade are now 76 and 5 per cent. off list. Regular discounts are as follows:

Merchant Pipe.

	Jobbers, carloads, Steel. Black.	Galv.
	%	%
⅛ to ¼ in	67	51
⅜ in	69	55
½ in	71	59
¾ to 6 in	75	65
7 to 12 in	72	57
Extra strong, plain ends:		
⅛ to ¾ in	60	48
⅛ to 4 in	67	55
4½ to 8 in	63	51
Double extra strong, plain ends:		
½ to 8 in	56	45

Discounts on Genuine Iron Pipe are as follows:

	Black.	Galv.
	%	%
⅛ to ¼ in	65	..
⅜ in	67	53
½ in	69	57
¾ to 6 in	73	63
7 to 12 in	70	55
Extra strong, plain ends:		
⅛ to ⅜ in	58	46
¼ to 4 in	65	53
4½ to 8 in	61	49
Double extra strong, plain ends:		
½ to 8 in	54	43

Railroad Spikes.—Railroads are doing little new buying, but demand for the smaller sizes is fairly active. All the mills making Spikes are badly in need of work. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

Spelter.—Prices are higher than last week, and there is more demand. We note a sale of 75 tons of prime Western Spelter for September and October shipment, at 4.57½c., East St. Louis, equal to 4.70c., Pittsburgh. We quote the market at 4.57½c. to 4.60c., East St. Louis, equal to 4.70c. and 4.72½c., Pittsburgh.

Boiler Tubes.—New demand is light, and is only for small orders for current needs. The railroads are placing only small orders for repair work. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, but which discounts are being shaded, are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1¼ in	42	47
1¾ to 2¼ in	42	59
2½ in	47	61
2¾ to 5 in	52	65
6 to 13 in	42	59

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

Iron and Steel Scrap.—Demand is very dull, and in the past week prices have eased off to some extent. The large consumers of Scrap, such as Sharon Steel Hoop Company, La Belle Iron Works, Pittsburgh Steel Company, Allegheny Steel Company and Page Woven Wire Fence Company are pretty well filled up, and are not taking in any Scrap at present. We quote Heavy Steel Scrap, for Pittsburgh, Sharon, Steubenville, Follansbee and Monessen delivery, at $14.25 to $14.50, while Heavy Steel Scrap, for hand charged Open Hearth furnaces, and for pieces weighing 10 lb. minimum and 300 lb. maximum, is $1 a ton higher. Dealers quote on other grades of Scrap as follows: Cast Iron Borings, $8.75 to $9; Bundled Sheet Scrap, $12.25 to $12.50; No. 1 Cast Scrap, $14.25 to $14.50; No. 1 Railroad Wrought, $15 to $15.25; No. 1 Busheling Scrap, $13.50 to $14; No. 2, $10 to $10.25; Sheet Bar Crop Ends, $17.50 to $18. There is a heavy demand for Iron Axles, and this is the only product on the whole list that has advanced in price. We quote these at $22 to $22.50, and they are firm. Steel Axles are $19; Low Phosphorus Melting Stock, $18.50 to $19; Rerolling Rails, $16 to $16.25; Machine Shop Turnings, $9.50 to $9.75; Railroad Malleable, $14; Grate Bars, $12.25 to $12.50; Old Car Wheels, $14.50 to $14.75, all in gross tons. We note sales as follows: 1000 tons of Sheet

Bar Crop Ends on the basis of about $18, Pittsburgh; 1000 tons of Heavy Steel Scrap at $14.25 to $14.50; 800 tons of Cast Iron Borings at about $9, and 750 tons of Machine Shop Turnings at about $9.75, Pittsburgh.

Coke.—There is no improvement in the Coke trade, either as regards demand or prices. Strictly Connellsville Furnace Coke for spot shipment can still be had as low as $1.50, at oven, while on contracts running through first half of next year about $1.75 is quoted. The Independent Coke Producers' Association reports that out of 36,330 ovens only 50 per cent. are in operation, and running about 5½ days per week. The Frick Coke Company is running about 53 per cent.; Rainey 31 per cent.; Brown & Cochran about 76 per cent., and Oliver & Snyder about 81 per cent. The output of Coke last week was 196,144 tons, a gain over the previous week of less than 3000 tons.

Daft, Heyward & Co., Frick Building Annex, Pittsburgh, dealers in Pig Iron, Alloys, Coal and Coke, have dissolved partnership and have been succeeded by Thomas R. Heyward & Co. Mr. Heyward will conduct the business as in the past, A. C. Daft, who was associated with him, having retired to devote his attention to the handling of Alloys.

San Francisco.

SAN FRANCISCO, August 26, 1908.

While there has been no decided improvement in the various branches of the Iron trade in the past two weeks, there is no occasion for discouragement. A number of enterprises are being considered by capitalists and electrical engineers, and within a few months some of these will probably be under way. The mining industry has not sent as much business to local engineering concerns as was expected, but conditions in the oil regions are good and oil prices still tend upwards. Some of the largest dealers in Pipe, Casings and Oil Well Supplies say that their business has not increased as yet, but larger orders seem only a matter of a little time. The demand for Light Rails for mining and logging roads is still very small. Standard gauge railroad construction is limited, principally to two or three large railroads on the Coast, and local jobbers cannot touch this business. The State of California has showed an increase of $109,000,000 in assessed valuation over last year. Most of this is due to improvements made in San Francisco. Total property values in the State now approximate $2,000,000,000.

Structural Material.—The construction of many new buildings is being pushed vigorously, and the downtown business section now looks well built up. Mechanics will be busy all winter in finishing large buildings now under way, but there will probably be no further increase in the monthly total valuations of new building work initiated in the balance of the year. Few Steel erection jobs of any size are now in progress in this city and vicinity. Fabricated Steel for reinforced concrete structures is not in great demand. There is a moderate demand for Cast Iron Columns for brick buildings and also for ornamental Iron work for class A buildings. It is now estimated that the construction of office buildings in the burned district downtown is well ahead of the immediate demands of business men who are gradually moving from temporary to permanent locations. About 125 office buildings, containing 13,200 offices, have been constructed or commenced since the fire. Of these, 63 first-class office buildings are already open, with an aggregate of 8900 offices. A number of the retail stores will probably delay coming downtown until well into next year, as will also many office tenants. The strictness of the new building ordinances has delayed the reconstruction of the old hotel and apartment house district west of Powell street. Property owners are planning to petition the Board of Supervisors for an amendment to the building law providing for a slow burning type of structure suitable for apartments and flats and not prohibitive in cost. The plan contemplates the erection of wooden frame covered both inside and outside with Steel Lath and cement plaster. All exterior woodwork is to be sheathed with Sheet Iron and fireproof roofs and metal cornices will be required. A new set of bids was opened August 25 for the construction in San Francisco of a sea wall, crib wall, transport wharves and sheds for the new Army Supply Depot at Fort Mason. The Penn Bridge Company, Beaver Falls, Pa., was the only outside bidder this time, its figure being $1,440,000. The San Francisco Bridge Company's figures were the lowest. It put in two bids, one of $1,143,000 and the other of $1,040,000. The Pacific Construction Company bid $1,147,000. Concrete and Steel are the principal materials to be used.

Pig Iron.—The local foundries are finding little business to do, and there have been two or three small failures. Under such circumstances demand is small and the market is weak. Advices have reached the custom house that the steamer Hazel Dollar left Shanghai, China, July 12 with 500 tons of Chinese Pig Iron for delivery at San Pedro, Cal., for the Los Angeles Iron foundries. The Iron was shipped by the Hang Yang Iron Works. Stocks of Pig Iron in this city are ample for all probable requirements for some time. The price of No. 1 English, No. 1 Scotch and Chinese Pig Iron is about $27 per ton, ex yard.

Merchant Pipe.—There is now less than the usual local demand for Merchant Pipe, with prices based on the usual differential. The movement of goods from manufacturer to jobber has not materially improved. Discounts on Steel Pipe are about as follows on jobbers' carloads:

	Steel. Black.	Steel. Galv.
	%	%
⅛ to ¼ in.	56.5	40.5
⅜ in.	58.5	44.5
½ in.	60.5	48.5
¾ to 6 in.	64.5	54.5
7 to 12 in.	61.5	46.5
Extra strong, plain ends:		
⅛ to ⅜ in.	49.5	37.5
½ to 4 in.	56.5	44.5
4½ to 8 in.	52.5	40.5
Double extra strong, plain ends:		
½ to 8 in.	45.5	34.5

Cast Iron Pipe.—Business is improving. Several contracts have been made for moderate sized lots of Cast Iron Pipe and inquiries are numerous. There are prospects of a heavy tonnage being placed within the next few months. There is a possibility of securing a market for Cast Iron Pipe in Mexico, although years sometimes elapse before bids are taken on plans for proposed enterprises in that country. Lower freight rates by sea give European countries the advantage. The bid of the United States Cast Iron Pipe & Foundry Company for 356 tons of 4 in. to 16 in. Cast Iron Pipe, amounting to $12,726, has been accepted by the Board of Water Commissioners of Santa Barbara, Cal. City Engineer F. H. Miller of Grass Valley, Cal., has prepared estimates for an extension of the city's 6-in. water main 1150 ft. The citizens of Sausalito, Cal., propose to bond the city in $100,000 to install a municipal water system. The Board of Public Works of Los Angeles has rejected all of the bids, ranging between $2,000,000 and $3,000,000, for the construction of the "Jawbone" section of the 240-mile aqueduct which is to carry water from the Owens River to that city. The city will do the work itself. San Bernardino is rapidly replacing with Cast Iron Pipe the Kalamein Pipe laid in 1891 for water distribution, corrosion having practically destroyed the present system. Bids have just been taken for an additional lot of 4, 8 and 12 in. Cast Iron Pipe. San Diego expects shortly to replace with Cast Iron Pipe the Steel and Kalamein Pipe laid several years ago. The town of Lodi, Cal., which has voted a bond issue, will soon be in the market for Water Pipe.

The union boilermakers and Structural Iron workers of San Francisco have just adopted a joint working agreement, whereby members of both organizations may work on all Iron and Steel Tank construction on buildings. The agreement fixes a minimum wage scale of $5 per day of 8 hr. The compact has been approved by the Building Trades Council and the San Francisco Labor Council. This ends the long standing difference between the unions in the matter of tank work. The number of structural workers employed in this city has fallen off greatly of late.

Active operations will be started at once at Riverside, Cal., by the Pacific Malleable Castings Company in the construction of a foundry. William Kerr is manager. The foundry will cost $25,000. Electric power will be used for operating the foundry and oil for annealing and melting operations.

St. Louis.

ST. LOUIS, August 29, 1908.

The demand for Structural Steel that was expected to develop this month for some large buildings in St. Louis is still delayed. One notable exception is the new Public Library, which has been given out this week. The demand from railroads is steadily increasing and mention is made of the urgent need for supplies since orders are followed up by telegrams. Material is mainly wanted for track and car repair work. There are few idle mills or shops in St. Louis territory in any line, and all those identified with the Iron trade have either increased their output or are preparing to do so, though few if any expect to work to full capacity in the near future.

Coke.—There is a steady and fairly satisfactory demand, some orders reaching 700 tons, but for the most part running smaller. Standard Connellsville is quoted at $2.25 to $2.75 for 72-hr. f.o.b. ovens, spot and contract.

Pig Iron.—While inquiry among the sellers of Pig Iron indicates that $13 is asked for No. 2 Foundry f.o.b. Birmingham, yet an offer of $12.50 on 1000 tons was accepted. Some Tennessee furnaces which have favorable freight rates into St. Louis territory are thought to have sold for less than $13, Birmingham basis. A leading house reports an inquiry for 2000 tons over the balance of the year; 500 tons first half; 2000 tons of Southern and 2000 tons Northern, delivery over the first half of 1909, and inquiries for small lots aggregating 2500 tons for delivery over the remainder of the year.

Finished Iron and Steel.—In Structural Steel numerous small orders are being placed, with the probability of a considerable increase in demand in September. There is more doing with railroads, and their wants cover the entire range of rolled products with the exception of Standard Rails, which continue dull. But little new equipment is being ordered.

Lead and Spelter.—The demand for Lead is improving and the market is firm at 4.45c. to 4.45½c. Spelter is also in fairly good demand and prices are strong at 4.57½c. to 4.60c. Producers of Lead and Spelter are not inclined to name prices for forward delivery. The Joplin ore market is ruling at $36 to $37 per ton.

Old Materials.—Transactions are mainly confined to dealers, though there is some demand from the mills. A pronounced scarcity of Relaying Rails is reported, and the demand from lumber interests in this territory is met with difficulty. We quote per gross ton, f.o.b. St. Louis, as follows:

Old Iron Rails	$15.50 to $16.00
Old Steel Rails, rerolling	14.50 to 15.00
Old Steel Rails, less than 3 ft	13.75 to 14.00
Relaying Rails, standard sections, subject to inspection	21.50 to 22.50
Old Car Wheels	14.50 to 15.00
Heavy Melting Steel Scrap	13.00 to 13.50
Frogs, Switches and Guards, cut apart	13.00 to 13.50
Mixed Steel	10.25 to 10.75

The following quotations are per net ton:

Iron Fish Plates	$14.50 to $15.00
Iron Car Axles	17.50 to 18.00
No. 1 Railroad Wrought	12.50 to 13.00
No. 2 Railroad Wrought	11.50 to 12.00
Railway Springs	12.00 to 12.50
Locomotive Tires, smooth	13.00 to 13.25
No. 1 Dealers' Forge	10.50 to 11.50
Mixed Borings, &c	5.50 to 6.00
Machine Shop Turnings	8.00 to 8.50
No. 1 Boilers, cut to Sheets and Rings	9.50 to 10.00
No. 1 Cast Scrap	12.00 to 12.50
Stove Plate and Light Cast Scrap	10.50 to 11.00
Railroad Malleable	11.00 to 11.50
Agricultural Malleable	10.00 to 10.50
Pipes and Flues	8.75 to 9.50

An independent manufacturer reports that the demand for Wrought Pipe is better. Prices are firm and jobbers are disposed to carry more Pipe in stock.

The Ludlow-Saylor Wire Company is just closing a fairly satisfactory season. The plant is now engaged on Screens and some Wire Cloth for another season.

The Koken Iron Works report a number of contracts for Structural Steel for country points, including Steptoe Valley Smelting & Mining Company, McGill, Nev.; a Salt Lake City warehouse; buildings in Kansas and Texas, besides some small local business.

The Hall & Brown Woodworking Machinery Company finds that in the past two months the demand for its special machinery has improved.

A local screw company states that while the demand shows some gain, competition is keener than usual and prices are not satisfactory.

The Standard Railroad Equipment Company reports the demand for car roofs and other railroad repair work is growing, and that there are a few orders for new cars.

The St. Louis Rail & Equipment Company has had a good demand for all kinds of rebuilt equipment, while for track materials, including second-hand Rails, Bolts, Spikes, Angle Bars, &c., the past month was the best since January.

The four leading Iron jobbers note a good demand from country buyers for immediate wants and in the aggregate considerable business is being done. St. Louis and other large city trade, however, is quiet. The W. G. Hager Iron Company is moving its stock to its new warehouse, which covers nearly two acres and is one of the largest in the West.

A. Leschen & Sons Rope Company finds a good general demand for Wire Rope, both for transmission and other purposes. The use of Wire Rope for overhead transportation of material is increasing.

Cincinnati.

CINCINNATI, OHIO, September 2.—(*By Telegraph.*)

September is usually one of the busiest months of the year in Pig Iron, but the feeling is rather general in this market that there is nothing to bring it about this time. The sudden ending of the Coal strike in the Alabama districts will have a tendency to lessen the gathering strength of the Southern product. The usual sluggishness of the finished material and machinery markets in Presidential election time is not any less pronounced this year; if anything, accentuated. There is a feeling of hopefulness among machinery men, however, and with the most of them August closed better than July, while the encouraging increase in inquiries and sales in the last days of the month augur well for September. Building improvements projected last year are most of them well along now, and the Structural Iron and Steel men are increasing their stocks to cover specifications and replenish depleted ones.

Pig Iron.—In the strictly local market the week has been very quiet, with fewer inquiries than for some time; but some very good sales have been negotiated in St. Louis and Detroit and Northwestern territory through Cincinnati sales agencies. A closely contested sale in Indiana which has just been concluded, involving shipments of about 5500 tons, really has little bearing on the current markets because of its terms. About 3000 tons of Malleable Iron is purchased by a central Indiana melter, who is quoted a specially low price, conditioned upon acceptance of the balance of shipments of about 2500 tons due on an old contract made at $20.50 a ton. The compromise price, it is understood, strikes a fair balance between the two extremes in price. Columbus, Wellston and Ironton furnaces share in this business. The quoted price of $12.50, Birmingham furnace, for Southern No. 2 Foundry is probably less stiffly maintained to-day than last week at this time because of the light demand, and the reports from the Alabama field of an ending of the strike. For the last quarter $13 is asked by leading interests, who report well filled order books, for early delivery. An offer of $12, immediate delivery, on 650 tons of Southern Iron by one of the leading selling agents here was turned down. Most furnaces in Southern territory still refuse to quote on next year's delivery. Northern Iron continues on the basis of $15, at furnace, for No. 2, with stocks undoubtedly accumulating. It is undeniably quiet at all selling agencies, but representatives of the largest concerns are absent in Michigan and northern Ohio, where some good sized deals are approaching completion. A Detroit concern is expected to buy to-morrow about 800 tons of Northern Iron for delivery over the last three and the first three months. Another Michigan concern, which is expected to buy Wednesday, is figuring on 1500 tons of Malleable. Another Michigan deal hanging fire is for 700 or 800 tons of No. 3 Foundry, which usually goes to the South, but which, because of the existing price and freight from that territory, will undoubtedly be taken by Ohio furnaces. A deal involving some 5000 tons—2000 each of Northern and Southern No. 2 Foundry and 1000 tons of 4 to 5 per cent. silicon Iron—for delivery to another Michigan concern, has been hanging fire for some time and is due to close within a day or so. A northern Ohio concern is inquiring for 2000 tons of Bessemer for early delivery. For early delivery and balance of the year we quote, f.o.b. Cincinnati, the freight rate being $3.25 from Birmingham and $1.20 from the Hanging Rock District, as follows:

Southern Coke, No. 1	$16.00 to $16.50
Southern Coke, No. 2	15.50 to 16.00
Southern Coke, No. 3	15.00 to 15.50
Southern Coke, No. 4	14.75 to 15.25
Southern Coke, No. 1 Soft	16.00 to 16.50
Southern Coke, No. 2 Soft	15.50 to 16.00
Southern Coke, Gray Forge	14.25 to 14.75
Ohio Silvery, 8 per cent. Silicon	19.70
Lake Superior Coke, No. 1	16.70 to 17.20
Lake Superior Coke, No. 2	16.20 to 16.70
Lake Superior Coke, No. 3	15.70 to 16.20
Standard Southern Car Wheel	22.25 to 22.75
Lake Superior Car Wheel	21.75 to 22.25

(*By Mail.*)

Coke.—Local selling agencies are in receipt of information that the strike is ended in the Birmingham district. Some difficulty is reported in securing prompt shipment of Coke from the Virginia fields, and the price of $1.90 to $2 is firm. Shipments on contract are being taken with no holdups and ovens are taxed to get it out on time and in quantities desired. Local dealers calculate that it will be about two weeks ere ovens in the Alabama district will be burning in normal volume, and no weakening in price is expected during the month of September. Pocahontas Coke is selling here at about $1.60 at ovens. The demand for Foundry grades is about the same as last week and the price for spot Foundry ranges from $2 to $2.50 on favorite brands.

Finished Iron and Steel.—August closes a little better in volume of sales from stores than July. There is a little increased demand for Twisted Steel Bars for concrete work, and Plain Steel Bars are a little more active. Some carload orders are being shipped in Structural Steel, and Iron Bars are showing a little more strength. No change is to be noted in prices, and dealers are quoting to the trade as follows, f.o.b. Cincinnati: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

Old Material.—The dealers are still in control of the market, and are urging higher prices on most all lines of Melting Steel and Steel Rails and Iron Axles. Mills in

this section are pretty well covered. Foundries are buying a little more freely, although protesting against dealers' stiffening of prices. There have been some very good sales of Old Steel Rails, which have advanced from 50 cents to $1 a ton. We quote dealers' prices to the trade as follows, f.o.b. Cincinnati:

No. 1 R. R. Wrought, net ton	$11.75 to $12.75
Cast Borings, net ton	5.00 to 5.50
Heavy Melting Steel Scrap, gross ton	12.50 to 13.00
Steel Turnings, net ton	6.00 to 7.00
No. 1 Cast Scrap, net ton	12.00 to 13.00
Burnt Cast, net ton	8.00 to 9.00
Old Iron Axles, net ton	15.50 to 16.50
Old Iron Rails, gross ton	14.00 to 15.00
Old Steel Rails, short, gross ton	12.50 to 13.50
Old Steel Rails, long, gross ton	12.00 to 13.00
Relaying Rails, 56 lb. and up, gross ton	20.00 to 21.00
Old Car Wheels, gross ton	12.50 to 13.00
Low Phosphorus Scrap, gross ton	13.00 to 14.00

Cleveland.

CLEVELAND, OHIO, September 1, 1908.

Iron Ore.—A number of small lot sales were made in the week and sellers are looking for some improvement in the demand this month. A number of consumers have not yet bought any Ore this season. Representatives of the Merchant Ore firms who have called on these interests in the past few days report that most of them will be in the market for some Ore soon. Furnacemen in some districts note an improvement in Pig Iron, and this has had a slightly stimulating effect on the Ore market. Ore shipments are increasing slowly and the movement during September is expected to be slightly better than in August. There was some demand for wild vessel tonnage for Ore during the week, but chartering was light as compared with this time in previous years. The Pittsburgh Steamship Company placed two more boats of its fleet in commission this week. Eleven of the small vessels of the company's fleet are still idle, and it is not probable that they will be sent out this season. The docks at the Lake Erie ports are now so crowded with Ore that during the balance of the season it will be necessary to ship nearly all the Ore direct from the boats to the furnaces. Ore prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50.

Pig Iron.—The Foundry Iron market in this territory is quiet, being somewhat less active than during the previous few weeks, but some improvement is noted in the demand for Malleable Iron. Among the Malleable sales reported is a 1000-ton lot at $15.50, northern Ohio furnace, for the last quarter of this year, and first quarter of 1909 delivery, and a few small lots by a local interest at $14.75, Valley furnace. Another inquiry for 1000 to 2000 tons of Malleable from a Muncie, Ind., consumer is understood to have resulted in an order. In Foundry Iron one local interest reports the sale of 500 tons of No. 2 at $14.75, Valley furnace, and another sold about 900 tons in the week. The price of Foundry Iron seems to have settled down to $14.50 in the Valley, although some sales, mostly in small lots, are being made at $14.75. Local furnaces are still quoting No. 2 Foundry at $15, at furnace, but it is understood that this price has been shaded for shipments outside of this territory to meet Valley competition. We quote No. 2 Foundry Iron at $15.25, at furnace, for local delivery. The demand for Foundry Iron for Eastern shipment continues fairly good, a number of sales being made in small lots. The Bessemer and Basic Iron market continues very quiet. There is no prospect that any of the idle blast furnaces in this territory will start up for some time, and it is probable that one Valley furnace will go out of blast. For prompt shipment, and for the balance of the year we quote, delivered, Cleveland, as follows:

Bessemer	$15.90 to $16.40
Northern Foundry, No. 1	15.50 to 15.90
Northern Foundry, No. 2	15.25 to 15.50
Northern Foundry, No. 3	14.90 to 15.25
Southern Foundry, No. 2	16.35 to 16.85
Gray Forge	14.40 to 14.65

Coke.—The demand for Foundry Coke shows a slight improvement, but prices are no firmer. The Furnace Coke market remains very quiet, with prices weak. Some sales of 72-hr. Connellsville Foundry Coke in small lots are reported at $2, at oven, for the balance of the year delivery, at $2.25 for the first quarter of 1909. We quote Standard Connellsville Furnace Coke for the balance of the year delivery at $1.60 to $1.75, at oven.

Finished Iron and Steel.—New business continues rather light, but specifications on contracts continue to come in in a very satisfactory manner, particularly from the implement makers, many of whom are giving orders for good sized tonnages of Steel Bars. There is a good demand for Structural Material from fabricating shops. While no work requiring a large tonnage of Structural Material is being figured on in this territory at present, there is considerable small work. Fabricators are still quoting very low prices. New business is largely in Steel Bars and Structural Material. The demand for Plates is light, showing little, if any, improvement. The American Shipbuilding Company is expected to place an order within the next two weeks for the two lake boats ordered last week by the Pittsburgh Steamship Company. They will require about 8000 tons of Plates and Structural Shapes. Because of the low prices at which the city of Cleveland recently purchased Cast Iron Pipe for Water Pipe extensions, the city has under consideration the expenditure of about $100,000 for additional Pipe, to be purchased soon in anticipation of future needs. The demand for Iron Bars is rather quiet. The two local Bar Iron mills were able, however, to produce 60 per cent. of their full output during August, and it is expected that a further improvement will be shown during the present month. The mills have some fairly good orders for shipment to railroads and other consumers in the Northwest. These orders are to be filled in time for shipment before the close of navigation. A report published in Eastern papers to the effect that an Iron and Steel company in this territory had placed an order for 3000 tons of Billets appears to be without foundation. In Structural Material an order was placed in the week for 300 tons for a railroad bridge, and an inquiry developed for 400 tons for a new Sheet mill to be built by Canton capitalists in Massillon, Ohio. There is also a new inquiry for Standard Rails, 2000 tons being wanted to complete a traction line running into Indianapolis. It does not appear certain, however, that the work will go ahead at the present time. Jobbers report that both their warehouse and stock orders continue to improve slowly and that the volume of their August orders were considerably larger than during any month since last November. We quote: Iron Bars, 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

Old Material.—The market is extremely quiet and prices are slightly easier. Dealers have filled orders recently taken for Steel Scrap and the present demand is very light. The Bar Iron mills have stocks on hand and are buying only in very small amounts. The majority of the dealers are holding fairly firmly to the prices that they have quoted during the past few weeks, but consumers are unwilling to pay these prices and the sales that are being made are mostly slightly under the market quotations. Dealers who have Scrap that they must sell and those having Scrap on cars are making price concessions to dispose of their Material. The Pennsylvania Railroad has a list out of between 2000 and 2500 tons to be sold this week. Dealers' prices to the trade per gross ton, f.o.b. Cleveland, are as follows:

Old Steel Rails	$14.50 to $15.00
Old Iron Rails	17.00 to 17.50
Steel Car Axles	18.00 to 18.50
Old Car Wheels	15.00 to 15.50
Heavy Melting Steel	14.25 to 14.75
Relaying Rails, 50 lb. and over	22.00 to 23.00
Railroad Malleable	13.25 to 13.75
Agricultural Malleable	12.00 to 12.50
Light Bundled Sheet Scrap	9.50 to 10.00

The following quotations are per net ton, f.o.b. Cleveland:

Iron Car Axles	$17.00 to $18.00
Cast Borings	7.00 to 7.50
Iron and Steel Turnings and Drillings	8.00 to 8.50
Steel Axle Turnings	8.50 to 9.00
No. 1 Busheling	12.00 to 12.50
No. 1 Railroad Wrought	13.50 to 14.00
No. 1 Cast	12.50 to 13.00
Stove Plate	10.00 to 10.50
Bundled Tin Scrap	8.00 to 9.00

Buffalo.

BUFFALO, N. Y., September 1, 1908.

Pig Iron.—Conditions are improving slightly and stocks at the furnace banks are being reduced. Calls are now being received from consumers who have not been taking Iron for a considerable period, and some consumers are requesting that specified shipments on contracts be anticipated. The larger proportion of all orders is for early delivery. There is some inquiry for the first quarter of 1909, but most furnacemen are of the opinion that offers now obtainable for next quarter's deliveries are not as favorable as can probably be secured later, and prices are not being quoted that are an inducement to consumers to place business. The market may be said to be a little stronger but not sufficiently so to cause any variation from last week's quotations. The following is the range of prices, f.o.b. Buffalo:

No. 1 X Foundry	$16.00 to $16.50
No. 2 X Foundry	15.50 to 16.00
No. 2 Plain	15.00 to 15.50
No. 3 Foundry	14.75 to 15.25
Malleable Bessemer	16.00 to 17.00
Gray Forge	14.75 to 15.00
Charcoal	20.00 to 20.50

Finished Iron and Steel.—Business continues rather

quiet, with only a moderate inquiry and no very large amount of new business placed. The New York Central Railroad has awarded a contract for Steel for the Kensington avenue viaduct to be built over its belt line tracks, this city—about 450 tons—to the McClintic-Marshall Construction Company, Pittsburgh, and the contract for its erection to the Terry & Tench Company, New York. Contracts for the remainder of the Structural Steel for viaducts, &c., in connection with the grade crossing work on the New York Central belt line here, 11 structures, aggregating about 3500 tons, will probably be placed September 3 in New York City.

Old Material.—The market remains firm, with consumers taking larger tonnages of some special grades of material. We quote as follows, per gross ton, f.o.b. Buffalo:

Heavy Melting Steel Scrap	$14.00 to $14.25
No. 1 Railroad Wrought	16.00 to 16.50
No. 1 Railroad and Machinery Cast Scrap	14.75 to 15.25
Old Steel Axles	17.00 to 17.50
Old Iron Axles	19.50 to 20.00
Old Car Wheels	15.50 to 16.00
Railroad Malleable	13.50 to 14.00
Boiler Plate	12.00 to 12.50
Stove Plate	12.50 to 13.00
Locomotive Grate Bars	11.50 to 12.00
Pipe	11.50 to 12.00
Wrought Iron and Soft Steel Turnings	8.00 to 8.50
Clean Cast Iron Borings	6.75 to 7.25
No. 1 Busheling Scrap	12.50 to 13.00

Metal Market.

NEW YORK, September 2, 1908.

Pig Tin.—The statistics of the Tin trade as compiled by C. Mayer, secretary of the New York Metal Exchange, show that the total visible supply at the end of August was 17,257 tons. This is an increase of nearly 1300 tons compared with the end of July and is the largest visible supply since November, 1902. Then the price of Tin was below 26c. That this heavy increase should occur in a month when there is no Banca sale is all the more astonishing. A year ago the visible supply was 5400 tons less. Deliveries into consumption in the United States for August were 2600 tons. The total deliveries for the eight months showed a decrease of 4700 tons compared with last year. In London and Holland, however, the deliveries for the first eight months of the year are 400 tons greater than last year. Stock in the United States, exclusive of Pacific ports, amounted to 2092 tons, compared with 1390 tons at the end of August. Business during the week has been dull, although on the sharp drop of August 28 about 75 tons of metal was sold. A portion of this, however, was forced sale. Price changes during the week have been as follows:

	Cents.
August 26	29.20 to 29.25
August 27	29.30
August 28	29.00 to 29.12½
August 31	28.95
September 1	28.65
September 2	29.00

The London market closed to-day at £132 10s., for spot, and £133 7s. 6d. for future.

Copper.—Consumers of Copper continue to purchase metal in small quantities. The ingot market is dull, as compared with the first of last month, but is vastly better than the first of the year. Prices are somewhat firmer, Electrolytic being quoted at 13.75c., and although there is a possibility of a lower price being accepted for desirable orders, no such sales have come to light. Producers of Lake are holding prices firm, at 14c., but a small quantity in the hands of second-hand dealers can probably be obtained at 13.87½c. The greatest factor in the Copper trade is the improvement in consumption. Large Brass manufacturers are running nearly 70 per cent. of normal, and Sheet Copper manufacturers are running practically normal. The demand for Copper Sheets is unusual. The Wire trade likewise shows an improvement, particularly for the smaller sizes. The export movement continues light, but nevertheless 25,905 tons was exported in August, and the total exports so far this year amounted to 207,617 tons, an increase of 96,871 tons over last year. The foreign market is about 5s. higher than last week, at £60 15s. for spot and £61 10s. for futures.

Pig Lead.—Business is dull, and while a little spot metal can be had at 4.57½c., most of the sellers are holding out for 4.60c., which is the price of the leading interests. The market in St. Louis is likewise firmer, at 4.45c. to 4.50c.

Spelter.—A considerably better feeling exists in the Spelter trade, and prime Western brands are held at 4.75c., New York. In St. Louis the metal is quoted at 4.57½c. One reason for the strength is the better feeling among the sellers of Ore.

Antimony.—This metal is exceedingly dull, Cookson's and Hallett's being obtainable at 8c. to 8.25c. Outside brands are held at 7.75c. to 8c.

Tin Plate.—The trade is dull, but prices continue unchanged, at $3.89, New York, and $3.70, Pittsburgh, for 100 lb. IC Coke Plates.

Old Metals.—Business in this trade has lagged, and, in fact, there have been so few transactions that quotations are more or less nominal. Dealers' buying prices, based on most recent sales, are about as follows:

	Cents.
Copper, Heavy and Crucible	12.75 to 13.00
Copper, Heavy and Wire	12.50 to 12.75
Copper, Light and Bottoms	11.50 to 11.75
Brass, Heavy	9.25 to 9.50
Brass, Light	7.25 to 7.50
Heavy Machine Composition	12.00 to 12.25
Clean Brass Turnings	8.25 to 8.50
Composition Turnings	9.50 to 9.75
Lead, Heavy	4.35
Lead, Tea	4.00
Zinc Scrap	3.25 to 3.50

New York.

NEW YORK, September 2, 1908.

Pig Iron.—The market is firmer, and the number of those who are willing to continue to sell at the recent level is narrowed down to a very few, who appear to be filling up. One buyer who inquired for 1500 tons ended up in purchasing 3000 tons. In New England sales have been made on the basis of $17.40, delivered, for No. 2 Foundry. We quote, at tidewater, Northern No. 1 Foundry, $17.25 to $17.75; No. 2 Foundry, $16.75 to $17, and No. 2 Plain, $15.75 to $16.25. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry and $16.75 to $17.25 for No. 2.

Steel Rails.—The New Haven Road has bought 800 tons of Rails for quick shipment from an Eastern mill and is expected to buy 4000 to 5000 tons more for shipment this year, but this latter business waits. The Baltimore & Ohio has bought 1500 tons in the past week from the Pittsburgh mill, and the Chicago, Lake Shore & Eastern has placed 1400 tons at Chicago, while scattering orders coming to the leading interest amount to 2500 tons.

Structural Material.—The New York Central has taken bids on 3500 to 4000 tons of Steel for bridges on the Belt Line at Buffalo and will open them this week. The Long Island Railroad contract for 4600 tons has finally been let to the American Bridge Company. Keen rivalry has developed on the Steel for several buildings recently let, particularly the Educational Building at Albany, the deliveries for which will extend over a considerable period. It is understood that Bethlehem Shapes will be used on this contract, the first important structure for which they have been ordered. In all, the August awards of Structural Steel throughout the country, on business large enough to be generally figured on, amounted to about 50,000 tons. The American Bridge Company took about 40 per cent. of the total. Last year, when this company closed about 50 per cent. of the fabricating work, there were months with totals running from 100,000 to 125,000 tons for the country. The Pennsylvania Steel Company has been awarded the Steel for rebuilding a portion of the Pan Handle Railroad bridge at Steubenville, Ohio—2000 tons—also 800 tons of bridge work for the Lehigh Valley. The demand for plain material has been only moderate recently. We quote, mill shipments, tidewater delivery, as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. From store Structural Material, cut to length, is sold at about 2¼c.

Bars.—Some business has come to the mills from jobbers, the manufacturers having just begun to book Steel Bar orders from the jobbing trade for the last quarter of the year, whereas October 1 was the limit in the summer months. Operations of Iron rolling mills are still quite restricted. We quote 1.41c. to 1.46c., tidewater, for Bar Iron, and 1.56c. for Steel.

Old Material.—The market seems even less active than a week ago. Some interest was then shown by New England foundries in the purchase of Scrap, but it was shortlived, the present basis for Pig Iron making founders, as a rule, unwilling to pay the prices asked for Old Material. Rolling mills are buying on the meagerest scale, and only as orders come to them. The accumulation of Old Material by dealers who are confident of being able to secure higher prices in the next two or three months has kept up. We quote as follows, per gross ton, New York and vicinity:

Old Girder and T Rails for melting	$11.25 to $11.75
Heavy Melting Steel Scrap	11.25 to 11.75
Old Steel Rails, rerolling lengths	13.50 to 14.00
Relaying Rails	21.50 to 22.50
Old Iron Rails	15.50 to 16.00
Standard Hammered Iron Car Axles	17.00 to 17.50
Old Steel Car Axles	15.50 to 16.00
No. 1 Railroad Wrought	14.00 to 14.50
Iron Track Scrap	10.50 to 11.00
No. 1 Yard Wrought, long	13.00 to 13.50
No. 1 Yard Wrought, short	11.50 to 12.00
Light Iron	6.00 to 6.50
Cast Borings	6.50 to 7.00
Wrought Turnings	7.50 to 8.00
Wrought Pipe	10.50 to 11.00
Old Car Wheels	14.50 to 15.00
No. 1 Heavy Cast, broken up	13.00 to 14.00
Stove Plate	11.00 to 12.00
Locomotive Grate Bars	11.00 to 11.50
Malleable Cast	12.50 to 13.00

Plates.—The mills continue to operate on about a 50 per cent. basis, and the business offered is only in small lots.

Apart from the incident which developed in connection with the placing of a locomotive works' contract recently, there has been a general maintenance of prices on the following basis for Standard Sized Plates, at tidewater: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

Ferroalloys.—Buying of small lots continues at unchanged prices. Ferromanganese is held at $44 to $44.50, seaboard. For 50 per cent. Ferrosilicon the price is unchanged, at $70, makers' works, but some shading of this price is reported.

Iron and Industrial Stocks

NEW YORK, September 2, 1908.

The check given to manipulation on the New York Stock Exchange by the disclosures of last week relative to matched orders and "washed" sales was only temporary. In the latter part of the week the control of the strong financial forces which have dominated operations for the past two months was again asserted, and prices were advanced. On Tuesday of this week there were slight general declines, attributable in part to the fact that the Government estimate on the cotton crop's condition at the close of August was somewhat disappointing. Below is given the range of prices on the active iron and steel stocks in the five days ending with Tuesday, September 1: United States Steel common 45½ to 47¾, preferred 108¾ to 112½; Car & Foundry common 40¼ to 41½, preferred 103½ to 103⅝; Locomotive common 56 to 58, preferred 106 to 107; Bethlehem Steel common 21½ to 23⅝, preferred 50 to 51½; Cambria Steel 35 to 38⅝; Colorado Fuel 33¾ to 38⅛; Crucible Steel common 7 to 7¼, preferred 49 to 50¼; Pressed Steel common 34¼ to 35¾, preferred 95 to 96; Railway Spring common 42¾ to 45, preferred 100; Republic common 23⅛ to 24½, preferred 78¾ to 81½; Sloss-Sheffield common 61 to 65¼, preferred 101 to 102½; Cast Iron Pipe common 26 to 27⅛, preferred 73 to 73½; Can common 6, preferred 60½ to 62. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 46⅞, preferred 111¼; Car & Foundry common 41, preferred 103⅝; Locomotive common 56½, preferred 107; Colorado Fuel 37¼; Pressed Steel common 35⅛, preferred 96; Railway Spring common 43½; Republic common 24, preferred 80½; Sloss-Sheffield common 65; Cast Iron Pipe common 26½, preferred 72¾; Can common 6, preferred 62.

The payment of a dividend of $218,750 on the preferred stock of the United States Cast Iron Pipe & Foundry Company was to have been made September 1, a New Jersey court having dismissed the temporary injunction granted some time ago. However, an appeal was taken, which acts as a stay until argument can be had in November.

Because of the existing business conditions, earnings of the Pressed Steel Car Company in the fiscal year ending December 31, 1908, will be among the smallest in its history. In 1904, gross earnings were only $4,498,268, while a net loss was shown of $707,111. The years 1906 and 1907 were highly profitable, the two showing gross earnings of $72,601,890, while net earnings for the $12,500,000 common stock were $3,824,804, or equal to 30.58 per cent., a yearly average of 15.29 per cent. Because of the accumulation of surplus funds, the company a few weeks ago anticipated the payment of $500,000 of its 5 per cent. notes, due February 1 next.

Dividends.—The Cambria Steel Company, Johnstown, Pa., has declared a quarterly dividend of 2 per cent., payable September 15.

The American Car & Foundry Company has declared a quarterly dividend of ½ per cent. on the common stock and 1¾ per cent. on the preferred stock, both payable October 1.

The Railway Steel Spring Company has declared a quarterly dividend of 1¾ per cent. on the preferred stock, payable September 21.

The American Can Company has declared a quarterly dividend of 1¼ per cent. on the preferred stock, payable October 1.

Large Order for Cranes.—The largest order placed for electric traveling cranes within the year in the United States was received August 29, by the Alliance Machine Company, Alliance, Ohio, for the Gary plant of the United States Steel Corporation, for the new billet mill, &c. This order consists of 17 cranes, as follows: One 40 ton, three 20 ton, three 50 ton, three 10 ton, two 5 ton, three 15 ton cranes, and two 75 ton patented ladle cranes of 75 ton capacity each. Among other orders for cranes received recently by this company are: One 5 ton, for the Pittsburgh Plate Glass Company, Pittsburgh, Pa.; one 10 ton, Whitaker-Glessner Company, Wheeling, W. Va.; one 50 ton, United Engineering & Foundry Company, Pittsburgh, Pa.; one 10 ton, Camden Iron Works, Camden, N. J.; one 10 ton and one 25 ton, National Transit Company, Oil City, Pa.; three 5 ton, Cleveland Frog & Crossing Company, Cleveland, Ohio; one 15 ton, one 10 ton, one 5 ton and one 10 ton, Pittsburgh Steel Company, Pittsburgh, Pa.; one 10 ton, Chicago Railways Company, Chicago, Ill.; one 10 ton, Worth Brothers Company, Coatesville, Pa.; one 25 ton, Carnegie Steel Company, Homestead Works; one 10 ton, Inland Steel Company, Indiana Harbor, Ind.; one 40 ton and one 5 ton crane, Newport Rolling Mill, Newport, Ky. These contracts, in connection with the gun carriage contract recently secured by the company, insure full time and full pay for all of its employees for the balance of the year, as it has been running full time with entire force throughout the present period of depression.

The Production of Petroleum in 1907.

A total output far in excess of that of any previous year, an unparalleled accumulation of stocks, and high prices for oil of all grades characterized the petroleum industry of the United States in 1907, according to Dr. David T. Day, of the United States Geological Survey, whose statistical report is now in course of publication. The total production of petroleum in this country in 1907 amounted to 166,095,335 barrels, or 22,149,862 metric tons, an increase of 39,601,399 barrels over the production of 1906, which was 126,493,936 barrels, or 16,868,599 metric tons, the increase being greater than the total product of petroleum in any year up to 1889. The total value increased from $92,444,735 in 1906 to $120,106,749 in 1907. The average price decreased slightly, from $0.731 per barrel in 1906 to $0.723 in 1907.

Kansas and Oklahoma, with a production of 45,933,649 barrels in 1907, as against 21,718,648 barrels in 1906, hold first place, and California drops to second place, its production being 39,748,375 barrels in 1907, as compared with 33,098,598 barrels in 1906. In Illinois, the increased production—from 4,397,050 barrels in 1906 to 24,281,973 barrels—brought the State from ninth to third place, with an output more than fivefold that of 1906 and practically double that of Texas, which stood fourth in both years. Ohio, which stood third in 1906, with a production of 14,787,763 barrels, dropped to fifth place, its production amounting to 12,207,448 barrels. Pennsylvania's output in 1907—9,999,306 barrels—put it in the sixth place instead of the fifth. West Virginia, Indiana and Louisiana follow in the order named.

During 1907 a total of 18,855,691 barrels of oil was consumed as fuel by the railroads of the United States, as against 15,577,677 barrels in 1906. The estimated length of line operated by the use of fuel oil in 1907 was 13,593 miles, and the total length of the line covered by oil-burning engines is estimated at 74,197,144 miles, an average of 3.935 miles per barrel of oil consumed.

This country is the greatest oil producer in the world, its output in 1907 being more than 100,000,000 barrels in excess of that of its closest rival, Russia.

The special train to carry the members of the Pittsburgh Foundrymen's Association to the coal and coke plants of the Jamison Coal and Coke Company in the Connellsville region, will leave Union Station, Pittsburgh, at 7:55 a. m. on Monday, September 7. It will stop at East Liberty, East Pittsburgh and Wilmerding. There promises to be a very large attendance of members. Luncheon will be served and a ball game has been arranged.

Architects for the new Grand Central Station, New York City, have completed their plans and estimates. The total cost will reach $20,000,000. The new station will set back 40 ft. from Forty-second street and 70 ft. from Vanderbilt avenue.

It is reported from the Connellsville region that several thousand foreign coke workers who returned to Europe last fall will be recalled, as any important increase in coke consumption would find the producers short of workmen.

Tariff and Customs Amendments.

WASHINGTON, D. C., September 1, 1908.—Substantial progress has been made by the subcommittee appointed by Chairman Aldrich of the Senate Finance Committee to gather data to be used in the amendment of the classification of the Dingley tariff act and in the comprehensive revision of the customs administrative law of 1890. The subcommittee has given hearings to officials of the Treasury Department, members of the Board of General Appraisers, and to other customs experts.

Changes in Customs Administrative Laws.

The recommendations for changes in the tariff and administrative laws have been compiled by the subcommittee in such form as to make it practicable to state accurately the principal amendments desired. The most important suggestions made by the Treasury Department for changes in the customs administrative law of 1890 may be summarized as follows:

1. The codification of all the customs laws and the incorporation thereof with the text of the revised customs administrative law.
2. An amendment permitting importers to deduct from, as well as add to, invoice valuations to make foreign market value on date of shipment.
3. An amendment permitting importers of consigned goods to enjoy the privilegs of adding to or deducting from invoice valuations to make foreign market value on the same footing as importers of purchased goods.
4. The authorization of a 5 per cent. margin for undervaluation within which no penalties beyond the required duties shall accrue.
5. The lodging of all remedial power with the Secretary of the Treasury to remit penalties, make refunds, &c., where good faith on the part of the applicant can be shown.
6. The extension of all customs laws and regulations to importations made by mail which are now exempt from many of the most important requirements.
7. Authorization of a protest fee of $5 for each and every protest, to be refunded in case of decision in favor of the protestant.
8. The abolition of the fee system throughout the customs service.
9. The increase of the duty exemption for personal effects brought into the United States by returning travelers from the present maximum of $100 to $200.
10. Authorization to the Secretary of the Treasury to license custom house brokers.

To Obtain Accurate Market Values.

There has been much discussion in recent years of the proposition to permit importers of merchandise to deduct from, as well as add to, their invoice valuations to make foreign market value on date of shipment. The Treasury Department originally was opposed to the plan, but has modified its views in consequence of the experiences of a number of prominent importing houses which have suffered heavy losses as the result of being obliged to pay duties on the basis of invoice values predicated on purchase prices which proved to be materially higher than the market at the time of shipment. The Treasury officials take the ground that if an importer is required to add to his invoice to make market value he is entitled to deduct therefrom if the market declines after the purchase is made and before shipment.

There has been much diversity of opinion as to the propriety of the proposed concession to importers of consigned goods, giving them the same privilege as importers of purchased goods in the matter of adding to or deducting from invoice valuations. The fact that undervaluation frauds usually occur with respect to consigned goods and rarely involve purchased goods has been the principal argument against placing the two classes of importers on an equal footing. The Secretary of the Treasury, however, takes the position that the Government may protect itself without discriminating against honest importers of consigned goods, and therefore desires the law amended so as to put all classes on an equal basis.

Remedial Power Urged.

Treasury officials have urged the lodging of remedial power with the Secretary of the Treasury to remit penalties, make refunds, &c., where good faith on the part of the applicant can be shown, because of the thousands of instances of hardship to importers which have been brought to the Department's attention since the act of 1890 became a law. The small importer especially, not having the knowledge of customs procedure that is possessed by his big rivals, often finds himself the victim of an injustice through some purely technical error, such as failure to file a protest within the narrow limit provided by law, &c. Such an error cuts off his appeal to the Board of General Appraisers, and the Secretary of the Treasury is powerless to grant relief, no matter how conclusively good faith may be shown.

The imposition of a protest fee of $5 is urged, with a view to reducing the large number of frivolous protests which now cumber the files of the Board of General Appraisers. Inasmuch as no charge is now made for the filing of protests, nearly every case decided against the contentions of an importer is made the basis of an appeal, and in a single year the board has been called upon to deal with nearly 100,000 such protests.

Changes in Tariff Classification.

The recommendations for amendments to the Dingley tariff act thus far presented by the Treasury Department are limited to changes in classification. During the eleven years the Dingley act has been in force, customs litigation has developed the fact that a large number of articles of importation were omitted from the Dingley schedules, either inadvertently, or because it was assumed that they would be subject to a satisfactory general classification. In some instances the courts have classified these goods in such a manner either as to prohibit their importation or as to deprive the government of a large amount of revenue and domestic manufacturers of the protection which Congress intended to bestow. The Treasury officials have made a careful examination of the customs cases tried in the past eleven years, and have presented to the sub-committee a list of all the articles the proper classification of which has been the subject of serious contention. The officials have contented themselves with bringing the facts to the attention of the subcommittee, and have not recommended specific rates for the articles in question.

The principal recommendations of the Board of General Appraisers, as laid before the subcommittee by the Secretary of the Treasury, include the following:

1. Statutory authorization of the Secretary of the Treasury to appoint the president of the Board of General Appraisers, leaving the board free to complete its own organization, select its secretary, &c., the president of the board to divide the membership into subordinate boards of three members each, &c.
2. A statutory definition of the term "commercial designation," as used by the board and the courts in determining classification. The term now has no specific statutory meaning and has been variously construed by the Federal courts in different jurisdictions.
3. The creation of a court of customs appeals, with a view to harmonizing the diverse rulings of the lower courts in different jurisdictions with respect to classification, &c.
4. The extension from 15 to 30 days of the period within which importers may appeal from decisions of collectors.

The project for the appointment of a court of customs appeals has been worked out by the board in detail. It is proposed that the court shall consist of a chief justice and two associate justices, appointed by the President and confirmed by the Senate, not more than two of whom shall be appointed from the same political party, each of whom shall receive a salary of $10,000 a year, and each of whom shall have been admitted to practice in the United States Supreme Court, and be "experienced in the customs laws of the United States." The judgments or decrees of the court of customs appeals are to be final in all cases except that it may at any time certify to the United States Supreme Court any questions or propositions of law concerning which it desires the construction of that court for its proper decision.

The subcommittee in the course of a week will complete the work now in hand, and beyond digesting the data secured will probably take no further action in the matter of revising the tariff and administrative laws until after the elections. W. L. C.

The strike at the plant of the Driggs-Seabury Ordnance Corporation at Sharon, Pa., is about over, practically all of the old men having returned to work. The company reports a large amount of work on hand.

The Machinery Trade.

NEW YORK, September 2, 1908.

The demand for machinery the past week was very light, there being only a small volume of scattered business, with no large orders and but few of the medium sized reported. Inquiries for fair sized lots of tools were also scarce, though houses report some for single tools that give promise of early purchase. It is this latter business that has been the mainstay of the trade the entire summer, but either the railroads and large industrial companies will have to come into the market more freely or the volume of small orders will have to greatly expand before a normal business shall be reached. The retrenchment policy of the railroads is being keenly felt; while they have been doing some buying from time to time, with few exceptions, they have been an unimportant factor in the trade. In other lines affiliated with the machinery trade business is reported to be dull, showing that there has been but little headway made toward a recovery from the depression, and that the demand is light in most of the mechanical products of iron and steel.

While the month just closed was unusually dull in comparison with the same periods of the past two years, the sales with many houses showed an increase of about 10 per cent. over those of July, which month also showed a slight increase over June. Thus while the improvement has been almost unnoticeable, it has been sufficient to warrant the belief that there will be a continued betterment, which seems the more probable in view of the fact that the close of the summer is near and that some of the best months are at hand. Those in a position to gauge the demand state that they see many signs of an improvement in conditions that usually affect the market, among which are the sizes of the orders placed and the intention to proceed with work that a few months ago was held up. Within the past few weeks several orders, amounting to from $5000 to $10,000 each, have been placed, and some projects that will necessitate the purchase of like amounts of mechanical equipment are understood to be ready for consummation.

The recent reduction in price of 10 per cent. made by a leading manufacturer of power presses and similar machinery, whose prices have always been regarded as standard, has caused considerable discussion in the trade, many of which are more convinced that the reduction will be followed by other manufacturers. Closely following this announcement of reduced prices, comes the report that an important manufacturer has reduced prices 10 per cent. on small motors, especially alternating current motors up to 200 hp. It is of interest to state in this connection that while no further reductions in prices have been reported in machine tools, several manufacturers have offered concessions in prices for orders. It is argued that in view of the cost of labor prices of machine tools are not too high at the present time. Nevertheless, it will not be surprising to hear of concessions being made for orders for fair sized lots of tools.

The temporary shops to be established at Broadway and Ninety-seventh street, New York, by the Rapid Transit Construction Company, has aroused considerable speculation in the trade as to the amount and character of machinery that will be required for equipping these buildings. The shops are to be used in connection with the enlargement of the subway from Ninety-sixth to One Hundred and Second streets, and will comprise six buildings, in which there will be a blacksmith shop and air compressor room, and which will cost about $63,000. The entire work will cost about $800,000, including the construction plant. While the company has a great deal of the necessary machinery on hand which has been used for constructing the extension of the subway to Van Cortlandt Park, it is probable that some purchases will have to be made to replace that worn out. Those in the trade manufacturing such equipment as is used in tunnel and subway work expect to receive inquiries for equipment at an early date.

The construction of the large plant in India by the Tata Iron & Steel Company, Ltd., of Bombay, India, which has been held up by the depressed business conditions, is expected to proceed in the early spring, and we understand that purchases of machinery will not be made before next March or April. Plans have been completed for the plant which will necessitate the expenditure of about $7,000,000, the equipment to include blast furnaces, open hearth steel furnaces, rolling mills, &c. The contracts for the equipment will be placed from the office of Julian Kennedy, Pittsburgh, Pa., who is affiliated with the Julian Kennedy-Sahlin Company, Ltd., of London, England.

The American District Steam Company, North Tonawanda, N. Y., has asked bids for the rebuilding of its plant recently destroyed by fire. The following new buildings will be erected: Foundry building, 100 x 120 ft., one story high with wings, 40 x 50 ft. and 36 x 118 ft.; casing mill, 50 x 175 ft., one story, with section, 50 x 62 ft., two stories; machine shop, 50 x 261 ft., two stories; dry kiln building, 36 x 150 ft., one story; the boiler and engine room, 30 x 40 ft., will be remodeled. Considerable new machinery will be required.

The Standard Oil Company has purchased a considerable amount of machinery from time to time for its new plant at Bayway, N. J., and is now arranging for the equipment to complete its new power plant at that point. It is understood that the company has bought most of the power equipment required, but there is considerable yet to be purchased, and as the plant is of such magnitude it is likely that the company will come into the market for various machines for some time to come.

The Central Carolina Power Company, Columbia, S. C., is planning the development of a hydro-electric plant at Turkett Shoals on Broad River, just above Columbia, to produce about 15,000 hp. of electricity to be transmitted to Columbia, Newberry and Winnsboro. The plant will include six units, each consisting of four turbine wheels direct connected to 2000-kw. generators, none of which has as yet been purchased. Viele, Blackwell & Buck, 49 Wall street, New York, who are engineers in charge of the work, have not yet prepared specifications for the required equipment which will probably be purchased through the engineering firm.

The Board of Supervisors, White Plains, N. Y., will receive bids until September 10 for all the material required for the installation of the electrical equipment, including boilers, engines, dynamos, &c.

The Philadelphia & Reading Railroad is asking bids on several contracts for work in connection with the abolishment of grade crossings in Philadelphia. These include Contract No. 1, locomotive coaling station; Contract No. 31, coal pocket yard, and Contracts Nos. 32 and 35, covering masonry, drainage systems, &c. Bids for this work will be opened September 16.

The Superintendent of Public Works, Albany, N. Y., will receive bids until September 9 for additional work on the Erie Canal, including Contract No. 20, sections 2, 3 and 4, for dredging a channel in the Mohawk River and other work between Rexford Flats and Little Falls, length 58 miles, and Contract No. 66, section 10, for work from the west end of Contract No. 64 to about 600 ft. east of Lockport Locks, length 35 miles.

Superintendent F. C. Stevens, of the State Department of Public Works, Albany, N. Y., will soon advertise for bids for three new Barge Canal contracts, involving an expenditure of nearly $4,000,000. The contracts, which were approved September 1 by the State Canal Board, provide for excavating the new canal from Fox Ridge to Galen, 9½ miles, at an estimated cost of $1,360,000; excavating from Galen to Lyons, 14½ miles, at a cost of $1,430,000; construction of locks at Mechanicsville, Stillwater and Northumberland and excavation at a cost of about $1,175,000.

Cincinnati Machinery Market.

CINCINNATI, OHIO, September 1, 1908.

August sales sheets with a considerable number of manufacturers in this section will show a preponderance of business in the last ten days or two weeks. Thereby these manufacturers are able to report a better month than July, and the best of the year so far, though it did not open propitiously with many of the larger concerns. The week has developed a little more of the conservative inquiry commenced recently by the railroads, which are rushing repairs on freight cars and are rapidly getting back into form again. There is evidence in this market of the Big Four's activity in this regard, and it is expected that the Vanderbilt roads will soon place some good business for all their shops. Politics begins to enter into the calculations of machinery manufacturers. Some have sent inquiries to their dealers in various parts of the country, and the replies are interesting, as showing the tendencies of the employing side. One manufacturer says he has a list calling for $5000 worth of new tools which he will order the minute he is assured of the election of his candidate for President, but not otherwise.

Among dealers and supply houses little or no improvement is noted, and the little buying going on is largely of second-hand machinery, with an occasional new tool.

The stock of the Machinery Sales Company, which is in the hands of a receiver, will be offered at auction on October 6. In the meantime, sales are being made from stock by the receiver, E. L. Wyler, who is acting under direction of the Cincinnati Superior Court. The liabilities were estimated at something like $30,000.

One large supply house, W. T. Johnston Company, has reports from Government representatives of the successful operation of the steam steering gears it furnished for two new Government snag boats built for the Mississippi River trade. The same company recently rebuilt the large Holly engine in the Newport, Ky., water works plant which was destroyed by fire in July.

Manufacturers of machinery for ice making plants report

good business, including several important orders. One such concern in this territory recently received seven carloads of 1-in. to 1½-in. pipe for steel coils. Manufacturers of electric power units also report encouragingly.

An order from the Government for a large motor driven lathe, 48 in. swing, for use in the Portsmouth Navy Yard, with some other orders for large machines recently received, has enabled a local manufacturer of lathes to keep his force pretty well employed. Another large lathe is on the Government list for use in the Mare Island Navy Yard.

One of the quarterly report periods of the Cincinnati Metal Trades Association has just closed. It is understood that the report will show fewer employes on the payroll than at the close of the preceding quarter in May.

The woodworking machinery trade continues to show gains. The J. A. Fay & Egan Company recently purchased $25,000 worth of new machinery, including a set of radial drills. A few more machines are on the list for early purchase. Drills have been quite active the past week, and local establishments making a specialty of standard types have made some good sales. Manufacturers of milling machines have also made some important sales, shipments being to practically all sections.

The Nugent Tool Company, manufacturer of a friction clutch, has moved its plant to 2128 Colerain avenue, the site formerly occupied by the Hercules Bell Foundry & Bronze Company. Several new tools were purchased, including an engine lathe, a new gas engine and some smaller tools. Neale S. Riley is president, James S. Stephenson vice-president and Dwight S. Marfield secretary and treasurer.

Weidig & Co., Putnam, Ohio, have contracted with the Ohio Electric Company for 60 hp. of electric motors of the Westinghouse type, which will be installed and ready for use by September 15.

A change which is regarded by the employes as an improvement has been made at the Middletown, Ohio, plant of the American Rolling Mill Company. The new schedule provides for the three turns as follows: From midnight to 8 a.m., from 8 a.m. to 4 p.m., and from 4 p.m. to midnight.

It is reported from Findlay, Ohio, that the Adams Bros. foundry is working full force and has recently added men. Contracts for several iron fire escapes for public buildings in that section aided materially in keeping forces at work.

The Kenton Foundry Company is a new organization for Cincinnati. The capital stock is $10,000, and the incorporators are Fred Breiner, Frank Eltrup, Ferdinand Bosken, Joseph Bosken and Sebastian Abe.

The City Council of Lima, Ohio, recently declined the overtures of W. Kelsey Schoepf, president of the Cincinnati Traction Company and numerous suburban roads, for furnishing light and power for that municipality. The Council passed the ordinance for the erection of a $100,000 plant, and will provide its own light and power.

The capital of the Enos Machine Company, Gallipolis, Ohio, has been increased from $5000 to $30,000, and it is said new machinery will be installed and the capacity increased.

Chicago Machinery Market.

CHICAGO, ILL., September 1, 1908.

The Albany Iron Works, Albany, Ore., maker of steam engines, mining and mill machinery, whose plant, with the exception of a two-story brick warehouse containing patterns and manufactured stock, was destroyed by fire on July 31, will be rebuilt on the original foundations. The buildings destroyed were the foundry, 36 x 55 ft.; machine shop, 30 x 60 ft.; blacksmith shop, 28 x 36 ft.; woodworking department, 30 x 54 ft., and office, 16 x 30 ft., all of which were of wooden construction. The lower story of the warehouse has been temporarily equipped with new and old machinery for the continuance of work during reconstruction of the plant, active operation on which will be begun at once.

The woodworking machinery plant of Wright Brothers, Marinette, Wis., which was recently destroyed by fire, will probably be rebuilt some time this fall. The firm has two other mills which are not now in operation, and the new plant will be partially equipped with machinery taken from the idle plants, so that only a small amount of new machinery will be purchased.

Plans and estimates are being prepared for an electric light plant which the Retail Merchants' Association of Belleville, Ill., expects to construct to supply lights for the mercantile houses on two of the principal streets. It is figured that something more than $20,000 will be required to carry out these plans, which are in the hands of a committee of the association, of which F. S. Burns is secretary.

Plans for the contemplated improvements to the municipal electric light plant at Seneca, Kan., contemplate a change to a three-phase 200-volt system, the installation of a new switch board with oil switches, and the installation of a 50-hp. high speed engine and other necessary improvements. G. D. Myers is superintendent of the plant.

The city of McMinnville, Ore., is asking for bids on a 200-kw. three-phase 6600-volt alternating current generator and a 400-hp. water wheel for installation in the municipal electric light plant to be located on Baker Creek, 6½ miles from the city. It is the intention to have the construction and installation of the plant made directly by the Water and Light Commission of the city. An auxiliary steam power plant of 300-hp. capacity will probably be installed at the same time for emergency use during extreme low water. Claude Walker is chief engineer.

The Las Cruces Electric Light & Ice Company, Las Cruces, N. M., is contemplating early improvements to its plant, which will include the installation of a 125-kw. three-phase alternator, together with extensions of the water works system which will involve the laying of new mains, building of concrete reservoir and installation of new pumps.

Cleveland Machinery Market.

CLEVELAND, OHIO, September 1, 1908.

The machine tool market is beginning to show some improvement after a quiet period of several months' duration, during which there was very little change in conditions from week to week. Not only is the volume of orders somewhat better, but dealers and builders have taken on a more hopeful feeling regarding the outlook for the balance of the year. So far the greater part of the increase in the volume of business has been in sales to the automobile makers. A number of automobile makers in this territory are planning to either enlarge their plants or to replace some of their present machine tool equipment with new and more modern tools, and as a result some good orders have been placed with both the local dealers and tool builders. The orders placed with the builders are mostly for special tools, and those given the dealers are for standard machine tools. Outside of the sales to the automobile makers some improvement is noted in the demand for standard machine tools. With the improvement in general business conditions some orders have been placed for machine tools that have been pending for some time, and the volume of inquiries is somewhat better, although there are none in the market for large lists of tools. Builders also report some improvement in their foreign orders. While dealers still have fairly good sized stocks of tools on hand, some lines of tools are getting rather low as the result of the policy to reduce stocks considerably during the period of depression, and if conditions continue to grow better it will not be long before some liberal orders will be given to manufacturers to replenish stocks.

There is a fairly good demand for second-hand tools, and as the supply of good used tools is not large dealers are not having much trouble in moving their purchases rather quickly.

The general manufacturing situation continues to improve slowly, and the majority of plants are being run at fuller capacity than a month ago. This applies also to tool builders who have been able to add to their working forces. With the improvement of general conditions some manufacturing plants are preparing to carry out plans for improvements and additions, projects that have been held up until the outlook was more favorable. These projects have resulted in considerable improvement in inquiries for shop cranes. While a few good orders have been placed by railroads for handling machinery, railroads are as yet buying very little machinery for repair shop equipment, only such purchases being made as are absolutely necessary.

Foote, Burt & Co., Cleveland, machine tool builders, report a decided improvement in the volume of orders, and the company's plant is now being operated at 75 per cent. of its full capacity. The company has recently received some good sized orders for special tools for automobile plants, the largest volume of its new orders being in these lines. The company, however, reports an increase in orders for standard tools, particularly bolt cutters, and an improvement in its foreign business. Among the orders recently taken by this company are a few from railroads.

The Commercial Dairy Machinery Company, Cleveland, has been incorporated with a capitalization of $25,000 to manufacture dairy machinery by William C. Trapp, R. M. Calfee, A. C. Riddle, E. R. Poulson and J. H. Farnsworth. The company will not build a plant.

The plant of the Niles Mine & Mill Supply Company, Niles, Ohio, has been consolidated with that of the Mineral Ridge Mfg. Company, Mineral Ridge, Ohio, and moved to the latter company's plant. The Youngstown Furnace & Supply Company has established a plant in the building in Niles formerly occupied by the Niles Mine & Mill Supply Company.

The Canton Board of Trade has decided to accept the proposal of a company that agreed to locate a new rolling mill in that city provided a five-acre site was furnished. The Board of Trade is now engaged in raising the necessary funds to purchase the site.

The Star Drilling Company, Akron, Ohio, maker of oil and water well drilling machinery, is building a new plant

in Portland, Ore., to supply its Western trade. The company has placed an order for some new machinery equipment.

The Thew Automatic Shovel Company, Lorain, Ohio, reports an improvement in orders for steam shovels. The company has been able to reduce the stock that it accumulated during the depression and is now running its plant on full time.

The Ohio Nut & Bolt Company, Berea, Ohio, reports a very satisfactory improvement in the volume of its orders. July showed an improvement over June, and its August sales showed a good increase over July.

The Ohio Boiler Company, Girard, Ohio, has just completed some improvements at the plant of the Girard Iron Company, including pipe work, new stacks, the installation of a Mullen gas washer, dust catcher, &c.

The Heath Foundry & Mfg. Company, Plymouth, Ohio, has been incorporated with a capitalization of $10,000, by Charles E. Heath, C. F. Root, John A. Root, Percy H. Root and H. F. Root.

The American Iron Roofing Company, Elyria, Ohio, has been incorporated with a capitalization of $25,000, by G. H. Lewis, Louis Schmuerer, Frank R. Fauver, and Charles L. and Julia Schmuerer.

The trustees of the Ohio Soldiers' and Sailors' Orphans' Home, Xenia, Ohio, will receive bids on September 19 for a new power plant and for remodeling the present light and water systems. Plans and specifications are on file at the office of J. L. Smith, superintendent, and at the office of the architect, Frank L. Packard, Columbus, Ohio. At the same time bids will be received for the old mechanical equipment, consisting of engines, generators, switchboards, pumps and piping.

Philadelphia Machinery Market.

PHILADELPHIA, PA., September 1, 1908.

Indications are that reports of dealers and manufacturers concerning August business will show some variation. In some cases there have been substantial increases over the business transacted during June and July, while other reports are to the contrary. The trade on the whole expresses encouraging views regarding future business, and while inquiries during the latter part of the month were not as heavy as they were during the opening weeks, this condition is believed to be largely due to the vacation season. Considerable encouragement is also taken by the trade from the fact that general business continues to show small but steady gains. The placing of orders for rolling stock, more liberal purchases of materials and supplies for repair work on the part of some of the railroads would indicate that they are preparing to put their rolling stock and motive power in shape for service, although it is fully understood that it will require some time before they get to the point of purchasing machinery or tools on any scale.

Industrial plants are still marking time to a large extent, and until business reaches more normal conditions generally not a great deal can be expected by the trade from that direction.

The past week's business in the local market was largely in the way of small tools. In special tools somewhat more activity has developed.

The export trade has been quiet. Those having an established trade abroad in power transmission equipment report a dull month, stocks on hand by agents being kept at a low point.

Business in the second-hand machinery market has been on the whole pretty satisfactory. Orders have been mostly for equipment of the smaller class. A good day to day inquiry continues, and the trade anticipates a further buying movement during the fall months.

Some scattered business has developed in power equipment, but generally for small and medium powers. Some extension to plants is to be noted, with more pending, but the trade on the whole is quiet and the demand unsatisfactory.

A little betterment is to be noted in the foundry trade. Steel casting plants have been taking on some little business for prompt delivery. Gray iron casting plants, catering to the machinery trade, note a slight improvement in the demand, although it is still spotty. The trade, however, looks for a better volume of business in the fall months.

The Philadelphia & Reading Railway Company will take bids until September 16 for further work in connection with the abolishment of grade crossings on the Philadelphia, Germantown & Norristown Railroad along Ninth street in this city. The bids include the following: Contract No. 21, locomotive coaling station, Green street yard; Contract No. 31, coal pocket yard at northeast corner of Tenth and Norris streets; Contract No. 32, masonry, embankment, paving, water and drainage systems and new freight office building in yard between Berks and Norris streets, west side, and Contract No. 35, drainage for yards between York street and Cumberland street. Plans and specifications may be obtained from the office of the chief engineer, room 520, Reading Terminal.

The Atlantic County Board of Chosen Freeholders, at the County Asylum, Smith's Landing, N. J., opened bids on September 2, 1908, for a road traction engine. Also for 12 drop bottom wagons, with capacity of 2½ cu. ft. each, completely equipped with train attachment. Edwin Robinson, Smiths Landing, N. J., is chairman of the Road Committee.

The Fairbanks Company reports that the August business of its branch house in this city will show an improvement over that of the previous month. The machine tool department shows the greatest gain, but the business has been confined to small shop equipment. The steam and valve departments also show material gains, the former having taken orders for considerable extension work. Inquiries continue fair, and some very satisfactory business is pending.

The Hess Machine Works advises us that there has been a somewhat better demand from abroad for file-making machinery. Orders have been booked for several sets of machines for export to both Germany and Japan, which will be shipped during the week. The domestic trade is also a shade better, orders have been received for several machines particularly adapted to small work, while an increased business in special tools of a more general nature is reported.

The Royersford Foundry & Machine Company, Royersford, Pa., notes an increase in the volume of business during the past month. Orders for double punch and shearing machines are reported from the following concerns: Dilks Machine Company, Fulton, N. Y.; William Hauptman, New York City; the Youngstown Iron & Wire Company, Youngstown, Ohio, and the Ornamental Wire & Iron Works, Portsmouth, Va. Inquiries are reported better and the outlook for future business is more hopeful. This company is now building two larger sizes, along the same lines as its No. 3 double punch and shear. One will have a 25-in. and the other a 30-in. throat. Business in the power transmission department is somewhat better and there seems to be a steady, gradual improvement in the demand for all its various lines.

New England Machinery Market.

WORCESTER, MASS., September 1, 1908.

The market in New England has been uneventful during the week past, with a volume of business slightly greater, if anything. No orders of any size are reported, neither are large contracts being figured beyond those already reported. The machine tool builders report a better general outlook, based on renewal inquiries rather than on actual orders. General manufacturing business continues to develop a consistent improvement which, however, in most cases is very gradual. A few exceptional industries are practically back to normal, but the average is an increase in production only just large enough to be encouraging and influential in affecting business sentiment, which is decidedly hopeful. The automobile business continues to act as a wholesome tonic, for the builders are preparing for a great production. A striking illustration of the fact lies in the announcement that the combined Wayne and Northern companies will produce 10,000 cars for the 1909 market. W. E. Flanders, formerly representing the Walter H. Foster Company, in New England, is the head of this newly allied interest. This great manufacturing undertaking alone will affect New England in an important way, because of the large numbers of feeders of the automobile industry—concerns which manufacture parts and accessories—which manufacture in this territory. The aggregate of this kind of business will foot into very large totals.

The Laconia Car Works Company, Laconia, N. H., is about to carry out a plan of improvement of its plant which will involve the expenditure of $150,000. A group of new buildings will be erected, details of which as to dimensions are not yet completed. They will, however, provide a large area of increased manufacturing space, which will be used largely for the company's new department for the building of steel railroad cars. The improvements will include new equipment on rather a large scale, including cranes and machine tools, a considerable portion though not all of which has been purchased. The Laconia Car Works Company is an old established concern located on the Boston & Maine Railroad.

J. T. Thornton, Providence, R. I., has established a machinery business in the store at 64 South Water street, which will be conducted under the name of the Thornton Machinery Company. He will deal in new and second hand machine tools and woodworking machinery, engines and boilers and textile machinery. The lines of the Erie City Engine Works, Erie, Pa., and of Orr & Semborer, Reading, Pa., builders of engines and boilers, will be represented in the Providence territory under special arrangement, and other agencies will

be established later. An important specialty, however, will be second hand machinery. It is not probable that small supplies will be carried in stock. The store has been renovated and converted into an attractive showroom. Mr. Thornton, who will perpetuate the name of the Thornton Machinery Company, of which he was the founder and for years the head, has had a long experience in the machinery trade.

The business of the American Mfg. Company, West Cheshire, Conn., has been incorporated under the laws of Connecticut, with J. H. Beaulieu as president, George Hauser, treasurer, and R. E. Modrow, secretary. The company makes brass goods in sheet metal and castings. The business was established four years ago for the manufacture of brass goods from sheet metal, and last year a brass foundry was added to the factory. The company has recently begun to make a line of plumbing supplies, which is being added to as rapidly as possible. The company is not in the market for equipment at this time, excepting for oil burners that can be installed in the coal-burning furnaces for melting brass.

Massachusetts continues to maintain a position as one of the leading States industrially, as is proved in the report of the State Bureau of Labor and Statistics, making the comparison between 1900 and 1905. The report puts Massachusetts fourth in the list of States with a total manufactured product of about $1,125,000,000, a gain of $216,500,000 in the five years. New England folk like to see these indications of gains, to offset the statements of their neighbors of territory further west.

The Consolidated Electric Lamp Company, Danvers, Mass., states that all supplies in connection with the rebuilding of its factory, recently seriously damaged by fire, will be bought locally.

The development has begun of the reserve water power at Livermore Falls, Me., which will give 5000 additional horsepower to be distributed electrically. An addition of 60 ft. to the power station will be built, together with a penstock 1000 ft. long and 13 ft. diameter.

The Central Tool Company, Providence, R. I., has established a factory for the manufacture of dental tools at 110 West Exchange street. It is a Rhode Island corporation with $10,000 capital stock. The incorporators are Arthur P. Mowry, Louis S. Moulthrop and Fernando O. Jacques, Jr. The company is now engaged in the manufacture of special tools for the production of its goods.

The Steele & Johnson Mfg. Company, Waterbury, Conn., manufacturer of brass goods, has awarded the contract for a brick addition to its works, four stories, 42 x 150 ft. The company states that it proposes to replace some of its wooden buildings by more substantial structures, which will permit the rearrangement of departments and at the same time provide additional space for any purpose that may be required.

The Fales & Jenks Machine Company, Pawtucket, R. I., manufacturer of textile machinery, fire pumps, &c., is making extensive improvements to its plant, including the replacing of old machinery by new. About five years ago the policy of modernizing the plant was begun and has been continued, a large aggregate of purchases of machine tools having been made annually. Some tools have recently been purchased, and others will be bought later, though no list is prepared, orders being placed as the desirability of new machinery makes itself evident from time to time.

Government Purchases.

WASHINGTON, D. C., September 1, 1908.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until September 15 for a quantity of supplies, including two pattern makers' lathes, two motors, one pump and until September 22, for two drilling machines.

The Isthmian Canal Commission will receive bids until September 24, Circular No. 464, for marine boilers and other supplies.

The Isthmian Canal Commission will soon ask bids for one 20-kw. generator, 30 hp. single vertical engine, 36 in. x 24 ft. engine lathe, 14 in. x 6 ft. engine lathe, 2500-lb. steam hammer, universal grinding machine and two upright drills.

The following bids were opened August 24, Circular No. 459, for supplies for the Isthmian Canal Commission:

Class 13.—Thirty-four hydraulic jacks—Bidder 15, Bethlehem Steel Company, South Bethlehem, Pa., $2225.90; 22, Brooklyn Forge & Supply Company, New York, $2313.80; 29, William Wirt Clark & Son, Baltimore, Md., $3667.50; 45, Fox Bros. & Co., New York, $1819; 67, Joyce-Cridland Company, Dayton, Ohio, $1625.80, $1774.30, $2034.40 and $2325.40; 69, J. B. Kendall Company, Washington, D. C., $1906; 80, Manning, Maxwell & Moore, New York, $1820; 86, Motley, Green & Co., New York, $2307.02; 109, H. A. Rogers Company, New York, $2270.76.

Class 14.—Six locomotive jacks—Bidder 44, George S. Fowler, Washington, D. C., $318; 45, Fox Bros. & Co., New York, $296.94; 80, Manning, Maxwell & Moore, New York, $321; 86, Motley, Green & Co., New York, $330; 126, B. B. Terrill, Boston, Mass., $360.

Class 24.—Six rock drills and extra parts—Bidder 28, Chicago Pneumatic Tool Company, New York, $1015.66; 63, Ingersoll-Rand Company, New York, $1014.21; 64, International Electric & Engineering Company, New York, $1192.35; 125, Sullivan Machinery Company, Chicago, Ill., $1179.32; 139, Wood Drill Works, Paterson, N. J., $1058.74.

The following bids were opened August 25 for machinery for the navy yards:

Class 11.—One back geared crank shaper—Bidder 47, Compressed Air Machinery Company, San Francisco, Cal., $660; 69, Eccles & Smith Company, San Francisco, Cal., $597; 73, Frevert Machinery Company, New York, $584; 98, Henshaw, Bulkley & Co., San Francisco, Cal., $515 and $695; 102, Harron, Ricard & McCone, San Francisco, Cal., $693 and $478.50; 132, Manning, Maxwell & Moore, New York, $612; 171, Pacific Hardware & Tool Company, San Francisco, Cal., $550 and $575; 199, Springfield Machine Tool Company, Springfield, Ohio, $600.

Class 12.—One standard drill press—Bidder 47, Compressed Air Machinery Company, San Francisco, Cal., $278; 73, Frevert Machinery Company, New York, $233; 98, Henshaw, Bulkley & Co., San Francisco, Cal., $250; 102, Harron, Ricard & McCone, San Francisco, Cal., $280.50, $231.50 and $204; 104, Handlan-Buck Mfg. Company, St. Louis, Mo., $218; 132, Manning, Maxwell & Moore, $295; 171, Pacific Hardware & Tool Company, San Francisco, Cal., $260 and $210; 182, Charles E. Robideoux, St. Louis, Mo., $220.

Class 13.—One engine lathe—Bidder 47, Compressed Air Machinery Company, San Francisco, Cal., $975; 69, Eccles & Smith Company, San Francisco, Cal., $1028 and $1089; 73, Frevert Machinery Company, New York, $1094 and $992; 98, Henshaw, Bulkley & Co., San Francisco, Cal., $920; 102, Harron, Ricard & McCone, San Francisco, Cal., $1138, $1312, $925 and $1000; 117, I. H. Johnson, Jr., Company, Philadelphia, Pa., $1082; 157, Niles-Bement-Pond Company, New York, $1242 and $1345.

Class 101.—One double end saddle tank locomotive engine—Bidder 2, American Locomotive Company, New York, $5800 and $5700; 8, Burnham, Williams & Co., Philadelphia, Pa., $5720; 126, Lima Locomotive & Machine Company, Lima, Ohio, $6200; 176, H. K Porter Company, Pittsburgh, Pa., $5970; 226, Vulcan Iron Works, Wilkes-Barre, Pa., $5150.

Class 111.—One vertical turret lathe—Bidder 26, Bullard Machine Tool Company, Bridgeport, Conn., $2250, $2160.50 and $2075; 77, W. H. Foster Company, New York, $1720 and $1645; 175, Prentiss Tool & Supply Company, New York, $1398.

Class 112.—One toolmakers' engine lathe—Bidder 100, Hendey Machine Tool Company, Torrington, Conn., $955 and $1030; 173, Pratt & Whitney Company, Hartford, Conn., $843.

Class 113.—One tooth spindle profiling machine—Bidder 89, Garvin Machine Company, New York, $1024; 173, Pratt & Whitney Company, Hartford, Conn., $1150.

Class 114.—One gang drill—Bidder 173, Pratt & Whitney Company, Hartford, Conn., $652; 175, Prentiss Tool & Supply Company, New York, $369.

Class 115.—One universal slotting machine—Bidder 40, Chandler & Farquhar Company, Boston, Mass., $80.75; 73, Frevert Machinery Company, New York, $80.75; 215, Tucker Tool & Machine Company, New York, $80.75; 231, Waltham Watch Tool Company, Springfield, Mass., $80.75.

Class 116.—One slip roll former—Bidder 18, Burtsch & Co., Cambridge City, Ind., $88; 120, Knox Bros., New York, $69.15; 175, Prentiss Tool & Supply Company, New York, $68.50; 215, Tucker Tool & Machine Company, New York, $80.73.

Class 117.—One portable electric internal binder—Bidder 40, Chandler & Farquhar Company, Boston, Mass., $104; 84, R. W. Geldart, New York, $93.43; 103, Hisey-Wolf Machine Company, Cincinnati, Ohio, $104; 120, Knox Bros., New York, $104; 160, National Electrical Supply Company, Washington, D. C., $96; 222, United States Electrical Tool Company, Cincinnati, Ohio, $86.40.

Class 118.—One Pratt & Whitney engine lathe—Bidder 80, Fairbanks Company, New York, $500; 100, Hendey Machine Company, Torrington, Conn., $649; 132, Manning, Maxwell & Moore, New York, $525; 173, Pratt & Whitney Company, Hartford, Conn., $560.

Class 119.—One boring and drilling machine—Bidder 157, Niles-Bement-Pond Company, New York, $2090; 175, Prentiss Tool & Supply Company, New York, $1719.

Class 120.—Two spiral geared planers—Bidder 80, Fairbanks Company, New York, $2444 and $3334; 89, Garvin Machine Company, New York, $2800, $3280 and $3760; 90, E. A. Gray Company, Cincinnati, Ohio, $4004; 132, Manning, Maxwell & Moore, New York, $2450; 157, Niles-Bement-Pond Company, New York, $3384.

Class 121.—One spiral geared planer—Bidder 80, Fairbanks Company, New York, $1919 and $2475; 89, Garvin Machine Company, New York, $2500; 90, E. A. Gray Company, Cincinnati, Ohio, $2641; 132, Manning, Maxwell & Moore, New York, $3540 and $4630; 157, Niles-Bement-Pond Company, New York, $1959 and $2448.

Class 122.—One spiral geared planer—Bidder 80, Fairbanks Company, New York, $2070 and $2630; 89, Garvin Machine Company, New York, $2650; 90, E. A. Gray Company, Cincinnati, Ohio, $2795; 132, Manning, Maxwell & Moore, New York, $1910 and $3485; 157, Niles-Bement-Pond Company, New York, $2045 and $2556.

Class 123.—One No. 24 milling machine—Bidder 22, Brown & Sharpe Mfg. Company, Providence, R. I., $1430; 80, Fairbanks Company, New York, $1658.

Class 131.—One rod machine—Bidder 68, Drew Machinery Agency, Manchester, N. H., $287.50.

Class 132.—One plug machine—Bidder 229, S. O. Wood Machinery Company, South Boston, Mass., $995.

Class 141.—Four screw cutting engine lathes—Bidder 82, Fairbanks Company, New York, $770; 89, Garvin Machine Company, New York, $748; 100, Hendey Machine Company, Torrington, Conn., $840; 117, I. H. Johnson, Jr., Company, Philadelphia, Pa., $815; 132, Manning, Maxwell & Moore, New York, $830; 157, Niles-Bement-Pond Company, New York, $749; 175, Prentiss Tool & Supply Company, New York, $784.50; 225, Vandyck-Churchill Company, New York, $791.

Class 143.—One 40-ton and one 100-ton hydraulic jacks—Bidder 49, William Wirt Clark & Son, Baltimore, Md., $315.54; 83, Fairbanks Company, New York, $318; 120, Knox Bros., New York, $297.50; 132, Manning, Maxwell & Moore, New York, $181; 142, Montgomery & Co., New York, $289.

Class 144.—One hand punch and shear—Bidder 19, Berry & Aiken, Philadelphia, Pa., $105; 83, Fairbanks Company, New York, $163; 148, New Doty Mfg. Company, Janesville, Wis., $85 and $115; 178, Henry Pells & Co., New York, $74; 224, Vermilye & Power, New York, $78.90.

Class 185.—Three motors—Bidder 86, General Electric Company, Schenectady, N. Y., $328.50; 198, B. F. Sturtevant Company, Hyde Park, Mass., $286.50.

HARDWARE

OPPORTUNITY is afforded by the publication of details of imports and exports for the fiscal year ended June 30, 1908, to compile some statistics of our foreign commerce in various commodities in which the Hardware trade is more or less interested. The list of such commodities imported, as set forth in the reports of the Bureau of Statistics of the Department of Commerce and Labor, is much shorter than the list of related exports. A comparison of values of these imports for the fiscal years ending June 30, 1908, and 1907, is as follows:

Imports Into the United States of Various Commodities.

	1908.	1907.
Clocks and parts of	$471,133	$610,060
Copper, manufactures of	100,761	82,542
Cables and other Cordage	369,971	407,997
Binding Twine	1,116,588	227,490
Wire and Wire products	1,332,973	1,330,852
Cutlery	2,018,143	2,263,107
Firearms	287,679	306,085
Shotgun Barrels	169,445	193,190
Cylinder and Window Glass	824,616	1,037,770
Metal compositions, manufactures of	6,768,637	10,325,446
Totals	$13,459,946	$16,784,539

Aside from the falling off in importations of metal compositions, Glass and Cutlery, which was undoubtedly due to the general curtailment of business caused by the panic in the fall of 1907, the most important change shown in the above table is in Binding Twine, of which our purchases abroad have increased heavily. In the fiscal year 1907 we imported only 2,486,570 lb. of such Twine, while in the past fiscal year the quantity imported jumped to 12,692,166 lb., or over five times as much. Binding Twine pays no duty.

The list of exports as presented below includes quite a number of commodities which are not handled by the Hardware trade to a great extent, but the figures will be found interesting and perhaps instructive:

Exports from the United States of Various Commodities.

	1908.	1907.
Brass, manufactures of	$3,701,871	$4,580,455
Bicycles	796,277	1,182,914
Wheelbarrows and Hand Trucks	480,986	497,986
Clocks and parts of	1,461,989	1,445,290
Copper, manufactures of	3,506,183	5,970,885
Furniture of metal	361,519	527,043
Locks and other Builders' Hardware	6,174,954	6,421,471
Saws	969,977	817,681
Tools, not elsewhere classified	8,135,397	7,775,551
Table Cutlery	68,814	74,999
Other Cutlery	744,433	574,743
Firearms	2,669,489	2,769,917
Cylinder and Window Glass	107,596	95,388
Cash Registers	2,341,719	2,488,324
Typewriting Machines	6,495,756	6,274,439
Cut Nails	335,271	371,675
Wire Nails	1,983,465	2,098,923
Other Nails and Tacks	522,204	611,991
Safes	317,399	353,502
Scales and Balances	984,695	976,383
Stoves and Ranges	1,258,598	1,342,617
Lamps and Chandeliers	1,827,216	1,875,869
Plated Ware	726,983	837,451
Tin, manufactures of	1,011,733	1,181,534
Wooden Ware	490,582	528,720
Zinc, manufactures of	129,670	212,344
Cordage	885,229	934,630
Twine	4,982,324	5,584,772
Totals	$53,472,329	$58,407,497

The showing made in the export table is much more impressive than that of the import table. It is of course likely that some of the commodities enumerated only in the list of exports are also imported, but their omission from the import table is because the quantity is too small for separate classification. On examining the details of exports, it will be seen that the item of "Tools, not elsewhere classified," heads the list in point of value. Machine Tools are not included, as they are separately classified. It is gratifying to observe that despite the general falling off in trade in 1908, the exports of Tools markedly increased over the preceding year. Locks and other Builders' Hardware ranked second in 1907, but their sale abroad in 1908 declined, so that Typewriting Machines passed them. It is noteworthy that the value of the exports of Typewriting Machines has doubled since 1902, while in that interval exports of Locks and other Builders' Hardware have only gained about 10 per cent. A heavy decline is observed in Copper and Brass manufactures, which may safely be imputed to the great fall in Copper from the high prices ruling in the fiscal year 1907. It is interesting to note that the increase in the importation of Binder Twine was practically all from Canada, and that it was accompanied by a diminution in the export of Twine in general, including Binder and other Twines, the falling off being largely in the sales to British North America, with, however, increased sales to the United Kingdom. The export trade in Bicycles suffered quite a serious decline, while Cutlery made a notable gain. Exports of Wire Nails held their own remarkably well, but Cut Nails have altogether lost their ancient prominence, now being surpassed by "other Nails and Tacks."

Condition of Trade.

Reports from the country at large continue to indicate an improving tendency in general business in which the Hardware trade shares. The note of encouragement, tempered naturally enough by conservatism, is discernable in the letters of our jobbing correspondents printed herewith. As has previously been pointed out, the tendency toward improvement is much more marked in some sections than in others, and seems to be associated with the prospect of good crops, which are daily becoming so well assured that the possibility of anything in the way of a serious failure is no longer taken into account in a broad view of the situation. Local shortages owing to exceptional conditions must, of course, be reckoned with in the territory affected. There does not, however, appear to be enough disappointment along these lines to influence materially the general business situation, especially as on the whole the yield promises to be large and remunerative. Notwithstanding the unquestioned improvement in the general feeling with which the crops have so much to do, there are many, especially in Eastern centers, who state that business is still at a low ebb and declare that even those who take the most hopeful view of the market are slow to back their position with liberal orders. There is no doubt that buying is still measured by immediate, or, at best, by early requirements. At the same time the number of orders is appreciably larger and their character indicates not only a depletion of stock but an increased demand, which necessitates replenishment. Prices are firm on many lines. Advances, it is true, are not yet in order, but the extra discounts which have for some time been obtainable on purchases of any consequence are now harder to obtain. With this perceptible improvement in the tone of the market there are, however, some lines in which prices are not strong and concessions are obtainable by careful buyers. Not a few complaints are heard re-

garding the slowness of collections, and it would appear that some merchants are asking rather unusual accommodations of the houses from whom they buy.

Cleveland.

W. BINGHAM COMPANY.—Prosperous and better times are quite in evidence all over our country, and daily we see and hear of more signs of confidence and faith in the future than we have enjoyed for quite awhile. Reports from many sections go to prove this. So confident is the United States Steel Corporation as to expansion in their business in the near future, that it has ordered the American Shipbuilding Company to commence at once at the Lorain shipyards to build two freight steamers, 600 ft. long and 58 ft. beam, each carrying a capacity of 13,000 tons of iron ore. Surely this would seem to be the beginning of days of larger things. If we all had a little more faith in ourselves and in the capacity and resources of our country, there is no reason why we should not all of us be traveling on Easy Street very soon. As the good old colporteur used to say, "Faith is the substance of things hoped for and the evidence of things not seen." Now, if all of us had this same feeling in our breasts, wouldn't we be more hopeful of the future? Instead of listening to so much pessimistic talk, let us all try to be optimistic, for daily everything points to better times.

Surely, the farming community never was so prosperous. We were amused at a story a traveling salesman brought home a few days ago. It ran like this. A farmer went to a country store and told the dealer he wanted to buy a buggy. The dealer showed him one, and the farmer asked the price, and the dealer said $65. "Huh!" said the farmer, "I won't pay that for the buggy, for I bought one quite similar and fully as good a few years ago of you for $45." The dealer replied, "Well, now, I do remember that is so, and I remember you paid me for it in corn; that is, you delivered to me 500 bushels of corn at 9 cents a bushel, and took the buggy home." The dealer continued: "Now, my farmer friend, I will tell you what I will do with you to-day. If you will agree to deliver to me the same number of bushels of corn, say next week, I will give you not only the $65 buggy, but a farm wagon, a set of harness, a plow, a cream separator and $10 in money." The farmer replied: "Well, Jones, times are different, ain't they, for us farmers?" What does all this prove? that the most prosperous, happy and contented people in our great and beloved country are the farmers. The farmer is king.

In this "neck of the woods" everything looks hopeful and encouraging. Trade through salesmen and mail is growing larger as the fall season approaches, and the manufacturers here and all around us are starting up. A more hopeful and pleasant feeling is coming to us all.

We want to repeat our warning to the trade, that they should be placing their orders for fall, holiday and winter goods, because there will certainly be sale for them, and if orders are not placed considerably in advance of the consumers' wants, there will be a probable scarcity, also delay in their receiving goods. Therefore, our advice is to buy at once the fall supply of Stove Pipe Elbows, Stove Boards, Coal Hods, Axes, Ice Skates, Fire Shovels, Dampers, Oil and Gas Heating Stoves, Hand Sleds, Furnace and Stove Pipe Iron.

Trade in wrought merchant Pipe, Brass, Cast and Malleable Fittings is coming to us in a large volume. Medium and high priced inside and front door Lock Sets are in good demand. A great deal of building is going on all over the country, locally, a large amount.

Collections are fairly good, but with the sale of crops near at hand, there is no reason why every good merchant should not be able in the next 60 or 90 days, to take advantage of the 2 per cent. cash discount for prompt settlement of his bills.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The market is steady, quiet, and uninteresting. Even the scrap piles around the junk shops and in the corners of the "Pathological Farriery," which finds place in one of our nearby streets, refuse to shrink. There is no chance to absorb the profit under the head of fabrication in the ordinary blacksmith's shed; it takes the magic of a big combine to do that. And then, too, fabrications are not all confined to forge and rolling mill. Many of them see light only in a newspaper office. A big scare head gives out that the Harriman roads (not so very specific that) have ordered 6000 steel cars, or is it 7000? No matter; one is as easy to contradict as the other, when the order fails to materialize.

Meanwhile the grind goes on, the advertiser, the man whose province is to suggest wants, is busy. Papers don't seem to shrink in volume, and everybody must get ready for Christmas, once they are back from the mountains or the sea shore. The movement has begun, that is not to be denied, but no speed mania can be charged to its account. The cool nights of late August and early September call for more bed clothing, and take the sweetness out of the muskmelons.

This induces new trains of thought. What can one do to bring about the good times again? Money? People seem to have it for what they need. Some of the recipes are about as cheerful as how to make a luxurious hammock out of barrel staves. For example: If your roof will need painting within the next three years or so, do it now. If the chicken coop is not all that it should be, put on two slabs where one would do, and use larger sized Nails than you expected to. Both of these devices will help—one the lumber trade and the other the Great Northern Sugar Coated Nail Company. If you have a comfortable pair of shoes, throw them away at once. The mere fact that they are comfortable shows that you have worn them too long. Get a new pair, dash the expense! Don't you see it will help the shoe trade? Suppose everybody quit buying shoes, hats and clothes, where would the factories and tradesmen be? In short, conjure up artificial wants and carefully avoid much work, else there may not be work enough to go around.

The above is the argument of the gentleman or woman, like as not, who detests political economy, and has an idea that its principles were inspired by the evil one, and that he still keeps on writing supplementary chapters or volumes even in addition to those now unfortunately extant.

Suppose we try another plan and see what a change will come over the heavens and the face of the earth—Attention, please! Tackle your daily job with courage and vigor, determined to make the hours count for something. Quit for lunch at 12 o'clock—not ten or fifteen minutes before. If your work isn't finished at closing hour, stay a few minutes over and finish it, and leave your papers or your tools in good order. If your job is not sufficient to occupy your time or your most worthy efforts, say so; make a complaint and take on what you feel is commensurate with your strength and prowess. If you can effect a saving anywhere and save waste, do it; there will then be money left over to expand with, and to expend, and your own salary or dividend will expand too. See if it won't. Not so fast, maybe, as we should like, or as we may think just. But the result will come in a little while, if not just now. This doesn't mean only Hardware clerks—it means everybody able to do a lick of work. We shall then be producing wealth, the railroads will bestir themselves, for the new wealth will absorb their securities, since people will have confidence in their earning powers.

Work is the great remedy—a panacea for panics. Let everyone try it on. Yes, "keep smiling," as that New Year's card admonishes you—but work, even if you have to look serious once in a while, just for a change, but withal, do not let the defeat of your favorite baseball club depress you unduly. Labor Omnia Vincit. That grand old Latin motto still stands, and stands good for what it says.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—The improvement in business continues. In the past two weeks this market has been favored with visits from an unusual number of merchants. Almost without exception these merchants look forward to a good business for the rest of the year.

Stocks of goods are commencing to feel the strain of the fall demand. We have found a number of manufac-

turers slow in filling orders. This makes it very difficult to keep up stock.

We predicted there would be a shortage of goods this fall. Present conditions are carrying out our predictions. Merchants are complaining of long shortage lists. This is a natural condition following the conservative buying on the part of jobbers the past six months. We believe this condition will be accentuated as the volume of business increases in September and October.

Business this year will be later than usual. Retail stocks are very low. Merchants are waiting for the fall demand of consumers before buying. This will bring a large business upon jobbers all at once.

The jobber just now who has a full and complete stock and who is in position to fill his orders without shorts is to be congratulated. Retail merchants who buy from such jobbers should appreciate the risk these jobbers have taken in preparing their stocks for fall business. If there are occasional substitutions retail dealers should not be too exacting.

As the days progress it seems the corn crop in our territory will fully equal last year, while the cotton crop promises to be a bumper one. There is talk of a 4,000,000 bale cotton crop in Texas—probably the largest cotton crop ever raised in the State.

All the signs look like good business to us.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—With the month of August practically at a close, we think the results have been more satisfactory in the way of orders, although the general result has not been such that we could fly any banners on account of it. We think, however, that there is a much better tone in general business than earlier in the year.

Whether the Presidential campaign will make a difference or not, remains to be seen. Whenever there has been a question of policy as affecting general business conditions of the country and an uncertainty as to what would happen should there be a change in the administration it has generally had the effect of causing buyers to hold off awaiting results, and consequently a lull in business. We trust this fall may prove the exception to the rule.

We note from the trade journals that a great many of the mills are getting back to normal conditions, and from Pittsburgh that about 2500 men will resume their old positions this week. Also notice that bids have been asked for on the construction of 200 steel passenger coaches. These facts, together with the gradual calling into service of the idle freight equipment of the various roads, would indicate a more favorable condition of commerce. We think the pace is slow, although confidence is being more firmly established. Pig Iron shows some increased strength, stocks not being excessive in some quarters.

On the whole, we believe that the cloud is gradually lifting, and if nothing happens between now and January 1 to weaken the confidence which is slowly but surely gaining ground, we think that the remaining four months of 1908 will be much more satisfactory for every one. We pray such may be the case.

New Orleans.

WOODWARD, WIGHT & CO.—Conditions in this section during July and August have shown very much improvement over April, May and June. Weather conditions for the crops have been ideal for months, there being plenty of rain and plenty of hot weather.

Rice from the river districts has come in earlier than usual and very heavy receipts have obtained for several weeks. The more western sections of the rice belt are also earlier than usual and the receipts and shipments from this crop have also been very satisfactory at good prices. Conditions in the sugar territory are exceptionally good and the yield promises to be larger than last year.

Cotton conditions in Louisiana, Mississippi and Texas have been first class. While the price has gone down materially, it is still remunerative and with the prospect, concerning the size of the crop this vicinity will turn out, unless the market goes down further, which is not probable, the out-turn will be satisfactory to all concerned.

Many of the large lumbering plants which have been closed down for months have been started up, and some of the largest are preparing to operate by September 15. This has created a considerable demand for mill supplies, belting, shafting, etc., and business in this line has been good. Prices have also advanced $2 or $3 a thousand, and the immediate future in the lumber business looks very satisfactory.

Collections have been keeping up very well and banking conditions are very satisfactory. Money is sufficiently plentiful for all crops and business purposes, and whereas August conditions were not any improvement over July, September and October are two of the best months in all years, and while we do not look for anything like last September's business, the prospects for a good, satisfactory volume during the next two months is very encouraging.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—As the fall season approaches we notice an increase in the volume of business. Salesmen on the road are sending in their orders a little bit oftener, and the orders contain more items, and are in better quantities than they have been for some time. While of course we do not expect trade to be as heavy as it was last fall, still there is no question but it is improving somewhat every week. We believe that September and October will be especially good months.

Collections still continue rather unsatisfactory. A good many merchants are asking for more time when it comes to paying their bills.

The crop prospects from all over the South still continue good, and it now looks as if a big crop is assured.

Portland, Oregon.

FAILING-MCCALMAN COMPANY.—The writer is really unable to give a review of general conditions in the Portland territory, for we have been so busy these last two weeks ourselves that we have had very little time to find out how matters were going with other houses in this territory. If our experience is a fair sample, however, and we believe it is, business is to-day fully as large in cash values, and owing to the decline in goods, quite a bit larger in actual amounts of goods shipped, than it has been at any time since the drop off in business last fall. This statement, of course, refers to the immediate Portland territory.

In some of the territory traveled by Portland jobbers, business, we understand, is not nearly so good as last year, but is at present looking up. That this territory lags behind the rest of Portland territory is due entirely to the demoralization which still continues in the lumber market, but well informed lumbermen tell us that they look for a steady and rapid revival of business in this line. When this revival comes, business in the Portland territory will be quite a bit ahead of anything we have ever seen here before.

We certainly hope that our local conditions are but an indication of the approach of good times all over the country.

St. Paul.

FARWELL, OZMUN, KIRK & CO.—August business has been of a satisfactory nature. The weather has been generally favorable for harvesting and threshing. Grain is yielding fully up to expectations; the quality is good and it is beginning to move considerably. Collections already show this perceptibly. Conditions for fall trade are good and the prospects are quite satisfactory.

NOTES ON PRICES

Wire Nails.—The receipt of orders by mills is continuous, and gratifying, particularly in the western portion of the country. While the larger proportion of orders are for immediate shipment, some contracts are being placed. The market is steady and has a fairly confident tone. Quotations for the base sizes are as follows,

f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days.

Carloads, to jobbers	$1.95
Carload lots to retail merchants	2.00
Less than carloads to jobbers	2.00
Less than carloads to retail merchants	2.10

Galvanized Nails are quoted at $1 over the price of the regular Nails.

New York.—Local demand continues in about the same volume as for some time past. Sales of some distributors of Nails for August compared favorably in volume with those of the preceding month. Nails are held on the basis of $2.30 per keg in small lots at store.

Chicago.—The demand for Wire Nails continues to show improvement and it is estimated that the business for August will exceed that of the same month a year ago. At the rate orders are now coming in, mill activities will soon have to be increased in order to keep pace with the demand, which in the West is particularly strong. The situation as reflected by the improvement shown in Wire Products, is highly significant of the prosperity of the agricultural interests. Prices are reported to be rigidly maintained without deviation. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—A fairly heavy demand is reported from the West, but only a fair amount of new tonnage is being placed from the South and Southwest. Jobbers to some extent are taking in Nails for future requirements, and shipments by the mills are fairly heavy. We are advised that prices, on the whole, are being maintained. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$1.95
Carload lots to retail merchants	2.00

Galvanized Nails are quoted at $1 over the price of the regular Nails.

Cut Nails.—No meeting of the Eastern Cut Nail Association is scheduled before the last of September. From this the inference might be drawn that formal change in price is not contemplated in the near future. This is probably so, unless unforeseen conditions arise which change the present situation. There is improvement in the demand for Steel Cut Nails, and a stronger feeling is manifested by some manufacturers, who do not care to accept orders at lower than regular quotations, on account of the prices at which Steel Billets and Slabs are held. The general market is represented by the quotation of $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is the extreme market, on carloads and over, to the large trade. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

New York.—Requirements for Steel Cut Nails at this point continue light. They are held on the basis of $2.15 per keg for small lots at store.

Chicago.—The Cut Nail market has undoubtedly been sympathetically strengthened by the improved demand and firmness of Wire Nails and has received additional support of a more positive nature from other sources. Jobbers have found it necessary to increase their orders for replenishment of stocks, and the demand growing out of more extended work in car repairs has likewise been responsible for some additional buying. Prices are unchanged except that there is less tendency to recede from current quotations than has been the case for some months past. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98. In small lots from store: Iron Cut Nails, $2.25; Steel Cut Nails, $2.15.

Pittsburgh.—There is some improvement in demand for Cut Nails, the large trade placing more orders and for larger quantities than for some time. We are also advised that the tone of the market is firmer, due to the fact that prices on Steel Billets and Slabs are being rigidly adhered to by the mills.

Barb Wire.—It is between seasons for the use of Barb Wire, but quite a large amount is being shipped from the mills. The most marked activity appears to be in the Southwest, in anticipation of fall business. Regular prices are reported as being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.10	$2.40
Retailers, carload lots	2.15	2.45
Retailers, less than carload lots	2.25	2.55

Chicago.—Buying for fall trade has begun in Texas and the Southwest, and bids fair to develop favorably as the season advances. Shipments are at present light, as is usually the case at this season of the year. In view of the promising crop conditions throughout the West the prospect for a reasonably good demand when the season is fully open is regarded as quite flattering. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—When it is considered that this product is out of season, the amount of tonnage being shipped out by the mills and also distributed by jobbers to the smaller trade, is considered quite satisfactory. The tone of the market is firm. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.10	$2.40
Retailers, carload lots	2.15	2.45
Retailers, less than carload lots	2.25	2.55

Plain Wire.—The most activity in Wire products is shown in the demand for Plain Wire, which comes from manufacturers of Wire Fencing, and also from other sources. Mills are making liberal shipments on new business and also on contract orders. Regular prices are reported as being maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

Nos.	6 to 9	10	11	12&12½	13	14	15	16
Annealed	$1.80	1.85	1.90	1.95	2.05	2.15	2.25	2.35
Galvanized	2.10	2.15	2.20	2.25	2.35	2.45	2.85	2.95

Chicago.—The outlook for the fall Fence trade is encouraging manufacturers to extend their purchases somewhat, and they are less inclined to restrict specifications within as narrow limits as they have been doing for some time. This is true, not only of Fence manufacturers, but the miscellaneous users of Plain Wire as well. The increasing demand is, moreover, making it less certain that the prompt deliveries which the mills have for some months been able to make will be continued indefinitely, and more liberal provision in the way of stocks is deemed desirable. It is emphatically affirmed that regular prices are being uniformly maintained. We quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

Pittsburgh.—Manufacturers of Wire Fencing report trade active, and are placing liberal specifications against contracts with the mills. Other consumers of Plain Wire are buying liberally, and this product is moving quite freely, shipments by the mills being heavy, both on specifications and on new orders. It is stated that regular prices are being maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

Nos.	6 to 9	10	11	12&12½	13	14	15	16
Annealed	$1.80	1.85	1.90	1.95	2.05	2.15	2.25	2.35
Galvanized	2.10	2.15	2.20	2.25	2.35	2.45	2.85	2.95

Scythes.—Particulars regarding the Scythe prices for next season are not yet announced. It is expected that they will be known next week.

Bolts, Stove and Tire.—Quotations on Stove and Tire Bolts have been notably firm for a long period, during which many allied lines have been decidedly weak. A fair demand for these goods is reported, buyers apparently considering that the market has been well tested.

Prevailing prices may be represented by a discount of 85 to 85 and 5 per cent.

Wrenches.—No further concessions on Agricultural Wrenches have been reported for some time, and it would appear that the cutting on this line has about run its course. The market may be represented in a general way by a discount of 80, 10 and 5 to 80, 10 and 10 per cent.

Window Glass.—The plan upon which the organization of the Window Glass manufacturing interests shall be effected has not been settled, but meetings are being held at various Glass manufacturing centers for the purpose of perfecting an organization which will put the manufacture of Glass upon a more profitable basis. Business continues moderate and no changes in price have been announced. Manufacturers' discounts, from manufacturers' list of January 1, 1901, are as follows: For A single and double strength Glass, 90 and 15 per cent.; for B single and double strength Glass, 90 and 20 per cent. Jobbers' quotations from jobbers' list, October 1, 1903, for all sizes of single and double strength Glass for the entire country is 90 and 20 per cent. discount.

Rope.—Conditions in the Rope market remain practically unchanged, demand showing no increase, but continuing in about the same volume. The fiber market is quiet, with prices firm, but Rope manufacturers are not disposed to purchase while business continues dull. Quotations for Rope 7-16 in. in diameter and larger are as follows: Pure Manila, 9½ cents; Pure Sisal, 7 cents; No. 1 Jute, ¾ in. and up, 5¾ cents; No. 2 Jute ¼ in. and up, 5¼ cents.

Linseed Oil.—The market continues quiet and demand is confined almost entirely to small lots. Oil in crushers' hands is regarded as representing a fair amount owing to the quiet movement, and probably regular quotations could be slightly shaded for carload lots. Quotations are as follows: Western Raw, car lots, 43 to 44 cents; State and Western Raw, barrel lots, 44 to 45 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

Spirits Turpentine.—The price in this market has fallen off 1 cent per gallon, reflecting conditions in the South, where receipts have exceeded sales. At this point demand continues light, being confined to small lots. The New York market is represented by the following quotations: Oil Barrels, 38½ to 39 cents; machine made barrels, 39 to 39½ cents per gallon.

Pipe Cutters.—A good deal of demoralization continues in the market for Pipe Cutters, Barnes and Saunders patterns. Statements of manufacturers are to the effect that these goods are being sold close to cost—in some cases even below.

Central Stamping Company.

THE CENTRAL STAMPING COMPANY, whose executive offices and sample rooms have for some years been located at 24 Cliff street, New York City, is now settled in its new headquarters at 172 and 174 Fulton street. The company occupies the second and third floors of a fine modern building, and has spacious, light and airy accommodations for all departments. The show room is exceedingly attractive, and will contain samples of every article made by the company. The feature of the new location to which attention is especially called, is its accessibility. It is only half a block from the Hudson Terminal Building or from the Fulton street Subway, express station on Broadway, and but a short distance from Brooklyn Bridge and East and West Side elevated roads. The downtown North River ferries are also within easy walking distance.

H. VAN NEWKIRK has connected himself with the Peck, Stow & Wilcox Company in a responsible position, with headquarters at the New York branch. Mr. Van Newkirk was for 18 years in the employ of the Russell & Erwin Mfg. Company, 14 years of which were spent with the Philadelphia house, a large portion of the time as manager there, and the last four years in New York, as treasurer and manager of the New York corporation of Russell & Erwin Mfg. Company.

CONFERENCE OF RETAIL HARDWARE ASSOCIATION SECRETARIES.

A CONFERENCE of the secretaries of State retail Hardware associations, in what is termed the Central West, was held at the office of the Iowa Retail Hardware Association in Mason City, Iowa, on the 28th and 29th ult. The following officials representing the associations in the States named were present: L. D. Nish, Illinois; C. A. Peck, Wisconsin; M. S. Mathews, Minnesota; C. N. Barnes, North Dakota; H. E. Johnson, South Dakota; J. F. Barr, Nebraska; F. D. Kansteiner, Missouri, and A. R. Sale, Iowa. P. C. De Vol, president of the Iowa Association, and S. R. Miles, president of the Iowa Hardware Dealers' Mutual Insurance Association, were present as invited guests.

The first session was given over to the discussion of mutual fire insurance matters, with a view to bringing about uniformity of plans and methods. Four of the State Association secretaries present are also secretaries of mutual insurance companies, and reported insurance in force amounting to $12,000,000, with a rapidly increasing demand for policies.

The dates of the annual meetings of the associations covered by the conference, which were announced in connection with the annual meeting of the National Retail Hardware Association last March in St. Louis, were rearranged. The new dates as agreed upon are as follows:

NO. DAKOTA..January 26 to 29	ILLINOIS...February 17 to 19
MISSOURI....February 2 to 5	MINNESOTA.February 23 to 25
WISCONSIN...February 3 to 5	OHIO.....February 23 to 25
IOWA.....February 9 to 12	SO. DAKOTA.....March 2 to 5
NEBRASKA..February 16 to 18	

Plans were adopted for introducing features in the convention programmes which will enable all the States represented at the conference to participate in them.

The plans and methods of conducting the Hardware exhibitions held in conjunction with most of these conventions were also given much consideration. Other matters of common interest were discussed and the conference will doubtless prove of much benefit to the various associations represented at the gathering.

The conference will be made an annual feature, being called at some date previous to the fall campaign for convention work. To this end it was determined to elect officers, and A. R. Sale, Mason City, Iowa, was chosen president and J. F. Barr, Lincoln, Neb., secretary. The 1909 meeting will probably be held in Minneapolis late in August or early in September.

As a relaxation from the work of the conference those present enjoyed a trolley trip to Clear Lake, with a boat ride on the lake and an elaborate supper, and also visited the great cement plant at Mason City.

80-Rod Spools of Barb Wire.

IN order to meet the demand for Barb Wire spooled in strands of definite length, the American Steel & Wire Company is now furnishing its various brands of standard gauge Barb Wire in 80 rod spools. These are sold by the spool instead of by the pound, and in order to facilitate the figuring of delivered prices, the company has issued a differential rate book which shows the cost per spool at any given freight rate. The convenience of strands of fixed length is appreciated by many users, and a strong demand for the 80-rod spools has developed in various sections of the country.

E. C. Atkins & Co., Indianapolis, Ind., have leased the entire building, 115 Union avenue, Memphis, Tenn., which will be occupied hereafter as a storeroom instead of the former location, which was destroyed by fire. These premises are much more favorably situated than the former quarters, and the new storeroom is in every way a marked advancement.

The Gardiner Hardware Company, Inc., Canton, Ill., is building an extension 30 ft. long of brick construction with cement floor to its store, which will provide 3000 sq. ft. additional wareroom capacity.

Novel Shelving for Show Windows.

BY F. B. M.

A FLUTED front shelf for show windows can be quickly constructed out of a number of small Tin Pails, by first laying two parallel strips of wood on the floor of the window just far enough apart to take in the bails of the Pails. Each Pail is then covered separately with cloth, sticking the ends of the cloth inside the Pails. They are then placed in an inverted position, in a row, upon the strips. On plain white tissue paper outline with a Lead Pencil the letters contained in the word Hardware, and stick these in proper order fast to the cloth of the eight central Pails in the row with flour paste, being careful to apply the paste to the cloth and not to the more delicate letters. Little dabs of paste here and there on the cloth will be sufficient.

Another plan for making a cylindrical base is to cover a large sized Pail with cloth, invert it, and cut out part of the cloth covering from the side facing the window. The space cut out of the cloth is then filled with some lettered sign previously prepared, which may be secured around the Pail with Twine, underneath the cloth.

A pointed or angular front can be formed by using boxes in lieu of Pails, placed with their corners to the front. Lettering placed upon this angular front can be read by those approaching the window from either direction, which is also true to a certain extent of the cylindrical or semicircular fluted fronts.

A Diamond Shaped Box.

A pleasing change can be made occasionally by removing all of the shelving from the window and covering the floor, for instance, with red cloth. On this place a black cloth covered diamond shaped box, which should be about 2 ft. long and 1 ft. wide and 3 or 4 in. high. On the center of the top of the box any article to which it is desired to call especial attention may be placed. This article might be a File, and in front of the box can be placed a small card, with the following inscription on it:

This Illustrates Our Filedelity
In Business, in Trying to
Please Customers, Whom We
Value More than Diamonds.

Easel Shapes.

Lock cornered wooden boxes when they are not glued can easily be knocked apart, and the pieces used for making easel shapes, against which Hardware can be stood in an attractive manner. The wood can be stained green, which will not fade out like cloth.

Cone Shaped Center Piece.

A cheap ground work for a high cone shaped center piece may be constructed of coarse mesh heavy Wire Netting, covered with "turkey red" or green cloth, thin enough to punch Wire Hooks through, so as to hang articles on them. As Wire Netting is not only flexible, but possessed of the requisite strength, many novel and picturesque designs can be worked out with articles of Hardware or small House Furnishing Goods, utilizing the Netting as a base to hold the articles suspended by the Wire Hooks.

Requests for Catalogues, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM O. H. MINTON & BRO., Gotebo, Okla., whose Hardware store was destroyed by fire, but who have again opened up in new quarters.

FROM D. F. KNIGHT, who has recently opened a Hardware store at Cashion, Okla.

FROM BALL BROS., Holbrook, Neb., Shelf and Heavy Hardware, Stoves, Implements, Paints and Sporting Goods, who are opening a branch store at Bartley, Neb.

FROM HARRISON HARDWARE STORE, Paris, Ill., A. D. Harrison and Ed. Green, proprietors, who have bought the business formerly owned by Connely & Heustis, known as the Cash Hardware Store.

A Stove Selling Window Display.

BY LONGBEACH.

AN appropriate turning for the top of a stove window is made by hanging lanterns on wire. Stovepipe wire is very good, and does not show. If the window has one large pane of glass extending to the top or ceiling, a wire should hang from center of ceiling to within 5 or 6 ft. of bottom of window. From this another wire should slant to right and left, facing window, to within 3 ft. of window floor. Then starting in the center, suspend the lanterns by short lengths of wire about 12 in. apart (the wire will not slip if twisted several times around). Fill the bottom of window with Stove Boards arranged in a semicircle; set up a huge Heating Stove in the center far enough back so that when two lengths of pipe are run up and an elbow attached, the collar on the elbow will make it look as though there was a flue in the window. If you have one of the large pasteboard figures of a farmer in his shirt sleeves sitting on a lantern box, place him directly behind the Stove with the pipe attached. Having his coat off suggests in a realistic way the heat of the Stove. Fasten to his outstretched hand a small Oil Heater. Then place the smaller Heating Stoves around the semicircle. In the spaces formed by the circle, place a small Oven for a base, and on this a large Oil Stove. Fill in the space in front of Stoves with Flue Stops, Collars, Dampers, and Elbows. Place joints of different sized Pipe at each side. If you carry Sheet Zinc and Asbestos Board, place pieces of these in the window; then with price cards on each Stove, you have a window that will sell Stoves.

AMONG THE HARDWARE TRADE.

Loring & Titsworth have succeeded W. F. Long, Las Animas, Colo., in the retail Shelf Hardware, Stove, Tinware, Paint and Sporting Goods business.

The Arey Hardware Company has been incorporated in Salisbury, N. C., with a capital stock of $50,000. The company will handle Shelf Hardware, Stoves, Tinware, Paints, Sporting Goods, &c.

Haux Hardware Company, Grand Island, Neb., has been incorporated with a capital stock of $15,000, $7000 of which is paid up. The incorporators are Charles L. Haux, Rudolph Pistorius, and D. O. Beckmann.

The Watt-Sapp Hardware Company has bought the stock of Hardware, Tin Ware, Stoves, Implements, Plumbers' supplies, &c., of W. S. Bell & Son, Albany, Ga., and will carry on the business at the old stand.

Bragg & Dildine have succeeded to the Hardware, Stove, Implement, Paint and Vehicle business of Henry Bragg, Humboldt, Kan.

The Hardware stock of the Interstate Hardware & Furniture Company, Herrick, S. D., has been destroyed by fire.

E. A. Franz has opened a Hardware, Stove, Paint and Sporting Goods store in Hood River, Ore., succeeding Wm. Haynes.

A fire recently occurred in the warehouse of W. M. Tatum Hardware Company, Corsicana, Texas, causing about $300 damage.

ENTERPRISE MFG. COMPANY, Philadelphia, has issued a catalogue of Hardware specialties, including Sad Irons, Meat and Food Choppers, Coffee Mills, suction and force Measuring Faucets, Beef Shavers, Cheese Cutters, Tobacco Cutters, Tincture Presses, Fruit, Wine and Jelly Presses, Cherry Stoners, Raisin Seeders, Ice Shredders, Cobblers' Kits, &c.

DEATH OF E. B. PIKE.

EDWIN BURBANK PIKE, president of the Pike Mfg. Company, Pike, N. H., passed away at his home on the 24th ult., after an illness of one week, following an operation for appendicitis. Mr. Pike was born in Haverhill, N. H., April 7, 1845, the youngest of six children born to Isaac and Sarah Pike, and the last to survive. His father died when he was but 14 years old, and from that time on he was thrown upon his own resources. Ambitious and energetic even as a young boy, he worked hard to educate himself, studying for a while at Haverhill Academy and also at Newbury Seminary (Newbury, Vt.), working as he studied. When only about 17 years old he made his first trip selling Whetstones. Feeling, however, that there was not enough opportunity for him in the Whetstone line at that time, he took up other business. In 1861 he enlisted with the Union Army; his mother prevented his going away then, but two years later, when he was 18, he went South, and was connected with the supply and railroad department of the army for two years.

In the early 70's he accepted a position with the Enterprise Mfg. Company, Philadelphia, then in its infancy, having been established a few years previously by T. Henry Asbury. He was sole salesman for this firm for awhile, and afterwards their head traveling salesman.

EDWIN BURBANK PIKE.

His energy and genial personality were important factors in the rapid growth of this company which has since become one of the largest manufacturers in its line, and the personal friendship formed at that time with the founders of the company and with the merchants with whom he came in contact, were among the most cherished of his life. Many of the senior members of Hardware firms now among the largest in the country, well remember his enthusiastic demonstration of the company's specialties which were then radically novel.

In 1878 a severe attack of rheumatic fever obliged him to give up traveling for a time, and he again took hold with his brother, A. F. Pike, in the Scythestone business. His ever constant ambition to increase and extend any enterprise with which he was associated led to the organization in 1884 of the A. F. Pike Mfg. Company, at which time was added to the manufacture of Scythestones a general line of Oilstones and other abrasives for sharpening tools. He was vice-president of this company. In 1889 the business of the company had increased to such an extent as to necessitate further expansion, and the Pike Mfg. Company was incorporated, with his brother, A. F. Pike, as president, and himself filling the office of vice-president and general manager of the sales end of the business. In 1891 the death of his brother placed the full responsibility of the business upon his shoulders, and from that time until his decease he was president of the company. It is due to his tireless energy, aggressiveness and marked ability that the small business of 1823 is to-day the largest of its kind in the world.

Mr. Pike was married in Salem, Mass., April 14, 1865, to Miss Addie A. Miner, who died in the last week of August just 21 years ago. There were three children by this marriage, of whom two are now living, E. Bertram Pike, treasurer of the Pike Mfg. Company, and Winifred, now Mrs. Walter L. Emory of Honolulu. He was married again, September 10, 1890, to Miss Harriet Tromblee, who with one daughter, Katherine, survives him.

Mr. Pike was president of the Pike Family Association from the time of its organization. For a number of years he was actively interested in the work of the National Association of Manufacturers, the American Hardware Manufacturers' Association and various other organizations, but two years ago was obliged to withdraw for a time from active participation in this work on account of poor health.

During the latter part of his life Mr. Pike took an active part in religious work, being a member of the Congregational Church at Haverhill until two years ago, when he became one of the charter members of the Bethany Church at Pike, which was organized after years of effort on his part. He gave much time and thought to this work, seeking especially to awaken in the hearts of the children a love for the church and its worship and for everything good. He earnestly desired to see the erection of a beautiful church building, and chiefly through his efforts a fund is now well started for this purpose. The funeral services were held at his late home Wednesday morning, August 26, conducted by his lifelong friend, the Rev. John Barstow, and the Rev. Maurice J. Duncklee, until recently the pastor of the Bethany Church at Pike.

Mr. Pike was a man of very strong personality and of a most genial, generous disposition. He was a genuinely public spirited man, interested in everything that affected in any way the life of the town and always working for its material and moral betterment. His heart and his purse were always wide open, and many are the individuals who have been cheered and comforted and lifted over hard places by his ever ready thoughtfulness.

Mr. Pike took great pride in his business, often saying that he felt that his company were producers in the best sense of the word, for they went into the earth and took from it that which did not impoverish it and which added in many ways to the benefit and comfort of his fellowmen.

As an indication of the purpose which actuated him in his personal and business life, we quote from an address delivered by him at the annual conference of salesmen and department heads, held in the summer of 1907: "It has been my intention and effort for years that whatever I touched should be benefited by my connection with it, whether it was a piece of land, or a horse, or whether it was some one who entered our employ, or some one who bought something from us. It has been my aim that in every case the party or thing should be benefited because we had come in contact. And that is a principle that I want to carry out in my life, and in the life of the Pike Mfg. Company. Whatever we do let it be a benefit to all those with whom we come in contact. I want to put honesty and kindliness, as well as push and perseverance, into our business."

The Cash Hardware Company, Neillsville, Wis., has recently been incorporated with a capital stock of $10,000, the incorporators being A. G. Foss, Orin Lord and Edwin Holliday.

The Mitchell-Powers Hardware Company, Bristol, Va.-Tenn., has transferred its charter to Virginia, being incorporated in that State with a capital of $75,000 to $100,000.

A. E. Crisp has taken over the Hardware business of Glascock & Crisp, Harrington, Wash., and is continuing under the old firm name.

AN UP-TO-DATE DUTCH HARDWARE HOUSE.

CLOSELY allied to the United States by ties which reach back practically to the days of Columbus, Holland is a country full of interest to the American visitor, not only on account of its historical associations, but also on account of its important commercial relations with this country. Although possessing undoubted wealth, rich colonies, agriculture of high degree, an extensive shipping trade and many varied industries, Holland has neither coal nor iron, and is therefore compelled to look to the United States and her immediate neighbors to supply her with all the Hardware she needs. In proportion to her size and population, Holland takes a leading place among the customers of the United States, and, as there is no protective tariff (manufactured goods being either admitted free or subject to only a nominal duty—usually not more than 5 per cent.), it is not to be wondered at that keen competition exists for the orders of well established Dutch houses, and nowhere in Holland is this competition keener than in Rotterdam. As a result of the great sums which have been and are still being expended in the deepening of the waterway and the construction of extensive docks, Rotterdam, the second city in Holland, with a population of some 500,000, has succeeded in drawing to itself more than one-half of the foreign trade of the country and practically the whole of the vast transit trade that flows along the Rhine to and from Western Germany.

Rotterdam is the seat of many Hardware firms, one of the most important of whom is R. S. Stokvis & Zonen, Ltd. This house is already familiar to many American manufacturers of Hardware and Tools. The firm dates back to 1844, when the father of the present senior partner started a small business as a metal merchant in a side street in Rotterdam. In 1847 his son, S. R. Stokvis, entered the business after having served his time as an apprentice in the Hardware trade in Brussels. After one or two removals, rendered necessary by the continued growth of the business, premises were finally secured on the Leuhaven, a busy waterside thoroughfare in the heart of the shipping quarter of the town. One after another the adjoining premises have been either purchased or leased, until at the present time the establishment comprises a great block of buildings some five or six stories high, which are utilized for the offices, showrooms and warehouses.

The superficial area of the floor space at the headquarters on the Leuhaven is 776,000 square ft. (about 18 acres), while the stock carried represents a value of something like $1,200,000.

The Growth of the Firm

has been coincident with that of the city, warehouses having been erected in several of the outlying districts. A large warehouse for construction material and rails has been erected at Fynewoord, a suburb of Rotterdam, situated on the other side of the River Maas, in close proximity to the docks of the Holland-America Line, and the largest shipyard and engineering works in the country. A second warehouse for Tubes and Fittings is situated close to the central railroad station. Some idea of the magnitude of this branch of the firm's business may be gathered from the fact that in 1906 no less than 20,000 tons of Cast Iron Water Pipes were sold. A third warehouse specially constructed for the storage of heavy machine tools has been erected in another part of the city.

In 1904, its sixtieth anniversary, the business was converted into a private limited company, with a capital of 2,500,000 guilders (about $1,000,000), the entire capital being held by the Stokvis family. The company has six directors, the senior of whom, S. R. Stokvis, son of the original founder, is also president. The other directors are his two sons, Felix and Hugo, and his three nephews, Charles, Louis and Theodore. The head of the concern, although 80 years of age, is hale and hearty and still takes an active share in the management of the business. A recent visitor describes him as a "youthful grey beard, who, during the greater part of the year, may be seen in the office at any time from 9 a.m. to 6 p.m., conversing in four languages with the innumerable callers with a brightness and fluency as may cause many a man in the prime of life a qualm of envy, and whose success is solely to be ascribed to his unfailing courtesy, quickness in business matters, and steady work on well thought out lines."

Departments.

In a business of so complex a character as that of R. S. Stokvis & Zonen, Ltd., the department system must of course be strictly observed. Each of the directors has a specific branch under his own personal supervision, the whole being under the general administration of the Board of Directors. The sections are grouped into departments, four of which are devoted to the work of the clerical staff, bookkeeping, invoices, forwarding (home trade), and shipping (export). In the warehousing departments there are eight sections, namely: Iron and Steel; Oil and Greases; Ironmongery and Tools; Machine Tools; Sanitary Water Pipes and accessories, and gas-lighting plant; technical department, parts of machines of every description, and Cycles, Automobiles, &c.

A Great Variety of Stock.

The business embraces the whole range of Hardware from Incandescent Mantles to Internal Combustion Engines. It should be cleary understood that the house manufactures none of the goods thus handled. Their business relations extend all over the world, every country being tapped for its produce, though it goes without saying that the United States contributes the lion's share to the annual turnover, Great Britain, Germany, Belgium, France, Holland, and Denmark contributing in a lesser degree.

A visitor to headquarters is at once struck by the order, cleanliness and quiet which prevail. System everywhere is enforced. In the ironmongery department is to be found an enormous stock of light and heavy Hardware, including Pumps, Dairy Utensils, Agricultural Implements, Iron, Zinc, Lead and Tin, in Sheet, Pipes, Tubes and Chains of every description. The sanitary and gas-lighting department, in addititon to large stores, has two elaborately laid out showrooms, where all the latest American, Colonial and British sanitary water and gas appliances are displayed, and there is an almost bewildering assortment of Baths, Sinks, Washstands, Water Piping, ventilating appliances, Lamps, Chandeliers, &c. In the Tool section the latest inventions in Machine Tools are to be found, while the machinery department contains the very latest in steam, hydraulic and internal combustion Engines, with all their accessories and parts. The Cycle department annually handles no fewer than 20,000 complete machines. The firm possesses extensive workshops, where machine parts can be assembled, as well as repair shops for machinery and Cycles. In the technical department plans and specifications for the construction of ships, factories and workshops are prepared, as also for telegraphic and telephonic installations.

Well Appointed Offices.

In the offices, the card system has been carefully developed, so that every one of the countless inquiries which are annually received are filed and can be referred to in an instant. Automatic reckoners, rapid printing devices, automatic binders, and the most modern system of accountancy all tend to make the counting part of the business as perfect as human integrity and foresight can make it. The offices are large, airy, and supplied with most modern and up-to-date systems of heat and ventilation. Each department has its own waiting rooms, and a thoroughly modern telephonic system connects the different buildings.

In Holland alone 24 travelers representing the house are on the road. In the Dutch Indies at Soerbaya, the principal business town of Java, an important branch house has been established which carries on not only a general Hardware business, but also does a very large trade in the various machines required on the plantations and in the petroleum works. The firm is a large government contractor, and supplies an immense quantity of goods every year to the admiralty and war departments. In addition it acts as agent for Holland for Schneider & Co., of Le Creusot, the well-known French armor plate and ordnance manufacturers.

Pension Fund and Profit Sharing System.

Owing to the rapid growth and extension of their business, they have recently been obliged to open a large branch establishment in Amsterdam, the capital of the Netherlands, while, in order to further extend the scope of the business, a branch house has also been opened in the Belgian capital. A staff of over 400 persons, about equally divided between the offices and the warehouses, is employed. A fixed proportion of the firm's annual profit it set aside voluntarily to provide a pension fund for the aged or infirm employees (the latter not being called upon to contribute to this fund). The profit-sharing system has also been introduced, under which everyone employed by the company, in addition to his salary or wages, has a certain direct interest in the prosperity of the concern.

The business has lately been converted into a British limited liability company, with a capital of £375,000, or $1,875,000, of which the managing directors hold £175,000, or $875,000. An issue of £125,000, or $625,000 6 per cent, first preference shares of £9 each was subscribed for many times over.

Luthe Hardware Company's New Catalogue.

A NOTABLE addition to the number of modern Hardware jobbing catalogues has just been issued by the Luthe Hardware Company, Des Moines, Iowa. This is the first general catalogue which the house has published, a fact which makes its completeness and general excellence all the more remarkable. The book contains close to 1700 pages, with profuse illustrations and complete, detailed descriptions of all goods. A number of illustrations are in colors. A high grade of catalogue paper is used throughout the book, thus bringing out to advantage the engravings which are exceptionally large and clear. There is a complete and well arranged alphabetical index, and the book is also subdivided and indexed by departments under the following heads: Mechanics, and Edge Tools, Implements and miscellaneous Farm and Garden Goods, Builders' Hardware, Shelf Hardware, &c.; miscellaneous Hardware; Harness and Saddlery Hardware; Lamps, Lanterns, &c.; Stoves and Stove Sundries; Housekeeping Goods, &c.; Tin, Enameled and Galvanized Ware; Tinners' and Roofers' Supplies, Cutlery, Clocks, Fancy Goods, &c.; Guns, Ammunition and Sporting Goods; Lawn Furniture, Juvenile Wagons and Sleds and Skates, and Bicycle Sundries; Fishing Tackle; Store Fixtures and Appliances and Paints, Brushes and Painters' and Paper Hangers' Tools and Supplies. On the announcement page just following the title page, in the front of the book, the company sets forth the general platform on which its business is founded, which is certainly such as should commend itself to the trade. Simultaneously with the distribution of the catalogue, the company states that it is adding new lines and increasing the variety of its stock which it now holds to compare favorably with stocks carried in the largest Hardware markets in the country. The business of the Luthe Hardware Company was established in 1892. At the present time it employs a force of 12 traveling representatives, and has two large warehouses, both with railroad track facilities. New stories are being added to the main warehouse.

THE GEORGE W. DOVER COMPANY, Providence, R. I., has leased new and larger quarters for its offices and warerooms in the new Herrick Building, 56 Garnet street, Providence, to which the company removed September 1. Besides an extensive line of jewelers' supplies and jewelry specialties, the company makes a specialty of screw machine products and brass and silver turnings.

THE ROOT BROTHERS COMPANY, Plymouth, Ohio, has sold the manufacturing end of its business to the Heath Foundry & Mfg. Company, Inc., which will continue the manufacture of the Root specialties. The Root Brothers Company will confine itself in the future strictly to the wholesale Hardware business.

THE JONES HARDWARE COMPANY, Dalhart, Texas, has amended its charter, changing its name to Rowe Hardware Company.

CONTENTS.

GETTING READY FOR ANOTHER PARCEL POST CAMPAIGN.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., September 1, 1908.

AN emphatic reiteration of his former recommendations for a domestic parcel post, and especially a parcel post for rural routes, and a post check currency will be the leading feature of the forthcoming annual report of the Postmaster-General, which is now nearing completion. The partial success achieved at the last session of Congress in the movement to secure the passage of a postal savings bank bill, which was favorably reported from the Senate Post Office Committee and made a special order for consideration early next December, encourages the Post Office Department officials to believe that Congress at its coming session can be induced to take up the domestic parcel post project and at least authorize a series of experiments which the officials count up as the only necessary entering wedge to the establishment of a full fledged system.

The Plans of the Postmaster-General

are comprehensive and appear to be based on his belief that if he leaves the Department next March, either to accept another portfolio or to retire from the public service, he will be succeeded by some one in thorough sympathy with his projects. Inasmuch as Frank H. Hitchcock, until recently First Assistant Postmaster-General and now managing the Taft campaign, is generally regarded as Mr. Meyer's successor if the Republican party is continued in power, there is good reason to believe that the crusade undertaken in the interest of a domestic parcel post and kindred postal "reforms" will be urged throughout the next four years' administration. It is not a particularly pleasant outlook for the retail merchant, but it would be folly to ignore the facts or to fail to meet the situation promptly and energetically.

Two Propositions Ready.

It is understood here that two propositions which will be epecially urged upon Congress next winter will be the authorization of a series of experiments on rural routes to determine the practicability of the Postmaster-General's rural parcel post scheme, and the extension of the merchandise limit of the general postal service from 4 to 11 lb. and the reduction of the rate from 16 to 12 cents per pound. The principal argument heretofore used in favor of the reduction in the postage rates to 12 cents and the increase in the weight to 11 lb. has been the fact that packages can be sent from the United States to many foreign countries under more favorable conditions than govern the domestic postal service. Until quite recently this proposition was met with the contention that the weight limit of 11 lb. prevailed only in the case of agreements with minor foreign countries, and that important countries, like Germany and Great Britain, refused to consider parcel post agreements having a weight limit in excess of 2 kg., or 4.4 lb.

Recent Agreements with Great Britain and Germany Increasing Merchandise Weight Limit.

Since Congress adjourned the Post Office officials have made a systematic and successful effort to secure agreements with Germany and Great Britain that would appear to strengthen the argument for a domestic parcel post along the lines suggested by the Postmaster-General.

The original parcel post agreement with Germany contained an 11-lb. weight limit, but in June, 1903, this limit was reduced to 2 kg., and in October, 1904, a further restriction was added limiting the value of a parcel to $50. The Post Office Department recently, however, secured the rescinding of both restrictions, and packages may now be sent to and from Germany in the mails up to 11 lb. in weight and without regard to the value of the contents.

The postal authorities did not find it so easy a task to bring Great Britain into line, but a few days ago an agreement was reached under the terms of which packages are now admitted to the parcel post mails exchanged between the United States and Great Britain not exceeding 11 lb. in weight and without regard to value. The postage rate on such parcels sent from the United States to Great Britain is 12 cents per pound, but this rate is not reciprocal, the following schedule applying to parcels forwarded from Great Britain to the United States:

For a parcel weighing not more than 3 lb.—1 shilling 6 pence.
For a parcel weighing between 3 and 7 lb.—2 shillings 6 pence.
For a parcel weighing between 7 and 9 lb.—3 shillings 6 pence.
For a parcel weighing between 9 and 11 lb.—4 shillings 6 pence.

The "Concessions" and the Reasons Why.

While the advocates of a domestic parcel post are already making much of the agreement secured with Germany and Great Britain for an 11-lb. weight limit, one does not have to look far for the reasons which have actuated the German and British governments in making this so-called "concession" to the United States. As a matter of fact, the experience of the past three years, taken in connection with available statistics, has demonstrated to the postal authorities of both countries that their outgoing business through the international parcel post is much larger than the incoming, and for this reason it is obviously to the advantage of both Germany and Great Britain to increase the weight limit. There are several sound commercial reasons why both Germany and Great Britain have secured greater profit in the international parcel post than any of the countries which are parties to their agreements. Both countries produce enormous quantities of fine wares of small bulk and great value, for the exportation of which the international parcel post is specially suited. The great bulk of the products of the United States intended for export consists of heavy raw materials, which can only be forwarded through the usual commercial channels.

While parcel post statistics are notoriously difficult to secure either in Germany or in England because they are carefully amalgamated with the general postal accounts to prevent the disclosure of deficits, yet some recent figures compiled by the British Board of Trade from official sources shed light on the matter in a very suggestive way. In a statement of imports and exports for the first six months of the calendar year 1908 as compared with 1907, the item of "miscellaneous and unclassified exports (parcel post)" appeared together with figures showing exports valued at $13,362,524, and imports of only $5,293,054. Such being the tendency of the international parcel post between Great Britain and the leading countries of the world, it is not surprising that the British postal authorities should consent to an agreement with the United States having a maximum weight limit. So far as American producers and merchants are concerned, however, it would appear that the Postmaster-General has merely opened the door for foreign competitors, just as he proposes to open the mails to the giant catalogue houses in their effort to secure the business of local retailers.

The Postal Deficit.

The fact that a deficiency of $27,000,000 in the federal revenues has accrued in the first two months of the current fiscal year is causing much anxiety among the financial experts in Congress, a number of whom have spent the past week in Washington in connection with the preliminary work of revising the Dingley tariff act, and the exact figures of the postal deficit for the year just closed will be scanned with close attention. It is estimated that the shortage will exceed $10,000,000, although when the Secretary of the Treasury forwarded his annual report to Congress last December he made an estimate, presumably upon data supplied by the Post Office Department, showing the probable expenditure of $201,025,581.10 for the postal service for the year ending June 30, 1908, and a postal revenue of exactly the same amount without omitting even the 10 cents. These figures are especially significant in view of the additional estimate for the current fiscal year which ends June 30 next, the expenditures in which were set down by the Secretary at $230,441,016, while the revenues were estimated at $220,123,011.30, or a deficit of more than $10,000,000. If the experts have erred on the same side and to the same extent with respect to the figures for the current fiscal year as they did in making their calculations for the past year, it would appear that the country is threatened with a shortage of at least $20,000,000 in the postal revenues for the present fiscal year.

Actual Deficit of the Postal Service Much Larger Than Figures Given Out.

A good deal has been heard recently about the "apparent deficit" of the postal service, as though calculations based on strict business principles would place the postal service on a self-sustaining basis. It is true that if postage were charged on the official mail a comparatively small sum would be added to the revenues, but the analysis of the appropriation bills passed at the last session of Congress discloses some exceedingly interesting facts which show that the actual deficit of the postal service is far greater than the promulgated figures. It is a well-known fact that in the postal accounts no charge is made for rent, repairs, insurance, &c., for the Departmental and other buildings and equipment utilized in the service. It is known to very few persons, however, that the expense of lighting, heating and janitor service is charged to the Treasury Department and does not come out of the postal revenues, and, further, that all the salaries of the Postmaster-General, his four chief assistants and more than 1000 clerks in the Post Office Department, which are provided for in the legislative, executive and judicial appropriation bill, are also charged to the Treasury and are wholly eliminated from the cost of maintaining the postal service. Of course these vast sums, which by the peculiar bookkeeping methods of the Government are charged against the accounting department instead of the department in which and by which they are expended, are paid by the taxpayers at large who cannot distinguish between legitimate expenditures of the Treasury Department and postal deficits, but they are certainly to be taken into account in connection with new projects urged by the postal officials, who are so ready with the glib assertion that "postal deficits are not to be feared by a prosperous country."

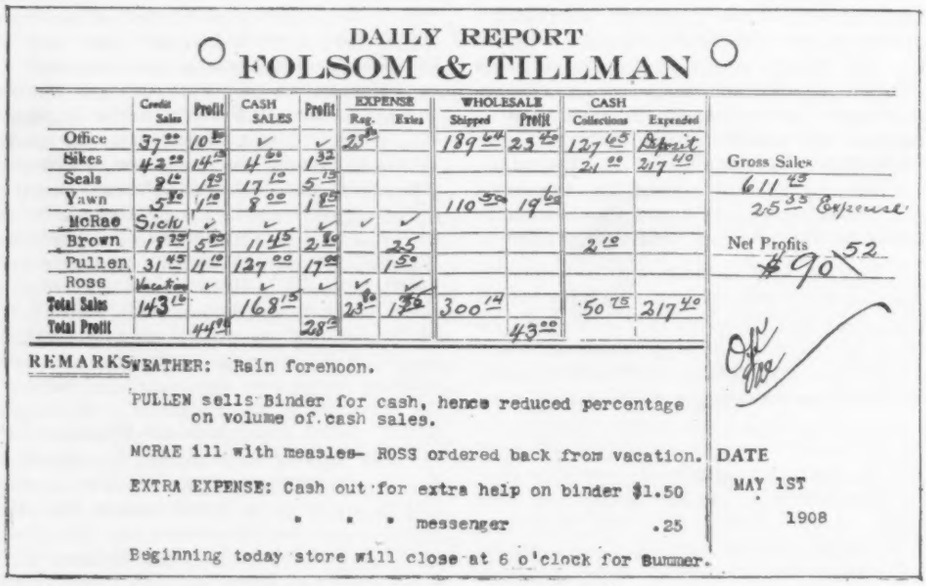
A CARD in the interest of Meriden, Conn., "The Silver City," is being sent out in which the statement appears that the statistics of average weekly earnings of all classes of factory industries show that Connecticut leads the country, and that Meriden heads the list with the highest average earnings per capita of any city in the Union. The city has seven important silverware factories and 26 other skilled industries. One side of the card presents a reproduction of the handsome municipal banner adopted by the city in 1907, in which the city is characterized as "A Merry Den of Industries," with its 95 factories. The banner also enumerates some of the leading products of the city.

THE J. STEVENS ARMS & TOOL COMPANY, Chicopee Falls, Mass., has issued an attractive illustrated booklet giving a brief history of the development of the concern and its product.

DAILY REPORTS OF A GEORGIA HARDWARE FIRM.

FOLSOM & TILLMAN, McRae, Ga., who deal in general Hardware, Implements, and Builders' Supplies, have an interesting system of making up daily reports, which enables the firm to grasp at a glance all the details of each day's business. A specimen report is reproduced in the accompanying illustration, which indicates at once the convenience and value of the results compiled. The report shows the total cash and credit retail sales made by each employee, together with the profit on each, also the wholesale shipments with profits, the regular and special expenses, collections and cash expenditures or deposits. The entry "office sales," to which $37 is credited on the report illustrated, covers mail orders secured by correspondence. Total gross sales, expenses and net profits for the day are collected and entered as illustrated. At the foot of the blank considerable space is reserved for remarks bearing on the day's business, such as the weather, which of course has a bearing on sales, and other information useful to the management.

The report is used in conjunction with the ticket system, a ticket being written for every sale, giving both cost and selling price. Every salesman has a number, and their tickets are assorted at the end of the day.



DAILY REPORT
FOLSOM & TILLMAN

	Credit Sales	Profit	CASH SALES	Profit	EXPENSE Reg.	EXPENSE Extra	WHOLESALE Shipped	WHOLESALE Profit	CASH Collections	CASH Expended
Office	37.00	10.[illegible]	✓	✓	25.[illegible]		189.64	23.40	127.65	Deposit
Sikes	42.00	14.[illegible]	4.50	1.32					21.00	217.40
Seals	9.[illegible]	1.[illegible]	17.10	5.[illegible]						
Yawn	5.[illegible]	1.10	8.00	1.[illegible]			110.50	19.6[illegible]		
McRae	Sick	✓	✓	✓	✓	✓				
Brown	18.25	5.[illegible]	114.5[illegible]	2.[illegible]		25			2.10	
Pullen	31.45	11.10	127.00	17.[illegible]		15.00				
Rose	Vacation	✓	✓	✓	✓	✓				
Total Sales	143.[illegible]		168.[illegible]		23.[illegible]	1[illegible]	300.14		50.75	217.40
Total Profit		44.[illegible]		28.[illegible]				43.00		

Gross Sales 611.43
25.35 Expense
Net Profits $90.52

REMARKS WEATHER: Rain forenoon.

PULLEN sells Binder for cash, hence reduced percentage on volume of cash sales.

MCRAE ill with measles— ROSS ordered back from vacation.

EXTRA EXPENSE: Cash out for extra help on binder $1.50
" " " messenger .25

Beginning today store will close at 6 o'clock for Summer.

DATE
MAY 1ST
1908

Specimen Daily Report of Folsom & Tillman, McRae, Ga.

Then, by the use of the adding machine, the report can be completed in a few minutes.

The system familiarizes the salesmen with the cost of every article in the store. Friendly competition among the salesmen is promoted, since a bulletin is issued every month showing their comparative standing, both in profits and in sales. Salaries can thus be regulated fairly, and a standard percentage of profit can be established. Profit making clerks are suitably rewarded at the end of the year.

All salesmen are required to make note of any particular future requirement of a customer. Should the latter drop a remark that he will shortly need a Stove, Plough, Washing Machine, or what not, the salesman takes down the name and article. The matter is closely followed up by the office, and if the sale is landed the notifying salesman is given credit for it.

The firm considers its system a very valuable one, and would not now try to run the business without it. It entails but little trouble, and the expense is nominal, being represented merely in the cost of printing the blanks. It pays both in keeping the management in close touch with the profits and with the work of the clerks, as well as in arousing the interest of the clerks.

The Lewis Sanders Company, Quanah, Texas, has been burned out, the loss approximating $35,000, which was largely covered by insurance.

THE TREATMENT OF TRAVELING SALESMEN.

BY SUBURBAN.

THE requisites of a good buyer are affability, command over himself, acquaintance with the goods he handles and a knowledge of the market. He should be able to talk on almost any topic. Necessarily an educated man is the best fitted for the position, which brings him into contact with keen business men. He must be a man of broad scope, able to handle propositions quickly, avoiding the delay often caused by having to seek counsel with some one over him, and he should be punctilious about keeping appointments. He must know what he can afford to pay, and through his knowledge of the market, demand and consumption, should be able to make an offer, which, while sometimes much lower than the offered price, may be accepted by the salesman, if closed at once.

Requisites in a Buyer.

An old Hardwareman, over half a century ago, said, "Buying properly insures sales." Thus is it necessary to employ a quick-witted, competent man, rather than a lad, and give the purchasing department the importance which it deserves.

Buyer Must Be in Touch with the Whole Business.

The buyer should be in close touch will all business details, being able to take advantage of special lots at special prices. He can perhaps win agencies through handling the salesman tactfully, and secure maximum profits by getting the lowest figures. Being affable he will never antagonize the salesman, but will listen to his story, and the description of his goods. He may draw from him whom he sells to, thereby ascertaining whether there will be a glut of his goods in his locality, and can at once decide whether his caller has desirable wares. The buyer's genial reception will leave a good impression when the salesman retires, and it is astonishing how a friendly buyer will be courted, and will obtain the best prices—if he knows the market.

Affability to Salesmen.

Friendliness Does Not Indicate Weakness.

With a certain class of salesmen friendliness betokens weakness, but that idea is soon got rid of and the opponent disarmed when the seller finds he has to deal with a man who knows the goods and the prices. What is more disagreeable than to call upon a purchasing agent and have him look at you as if you were one of his lowest serfs? He may, perhaps, be engaged in a task not more onerous than reading a newspaper, while on the other hand, he may be at work on a contract, or on some duty demanding his attention. It will pay him, however, to lay aside what he is doing and give the salesman a pleasant greeting, for it is often through such a tactful method a buyer obtains valuable information—that such and such a commodity is "off" or there is to be a "stiffening" in the market. Then, again, the buyer may hear of contracts to be placed, and other information which while not affecting his particular department may be of value to his firm. It is astonishing how the most diffident or reserved salesman will thaw when treated with affability, and how much information one can acquire in the way of competitors' prices, how much they buy, and a general knowledge of affairs in general.

Good Nature Pays.

Suppose your caller is a young man, you may perhaps draw him out by asking if he is married, and get him to tell you about his wife and baby. If a man along in years, he may relate with pardonable pride what progress his son is making at college, or tell you about his daughter's accomplishments. Congeniality between buyer and seller will engender a regard particularly on the part of the latter, and he may be willing to go out of his way to do the former a good turn.

Drawing Out Salesmen.

The Value of Politeness.

In many establishments the buyer is a youth perhaps serving also as a stock clerk, and feels him importance, while many salesmen are keen, thoroughly posted and experienced in visiting buyers. Naturally it antagonizes them to be met with a curt "How are you?" or "Now what's on the carpet?" from a youthful buyer. The combination of affability, tactfulness and knowledge of goods if possessed by the buyer is a valuable combination. In some, politeness is inbred; in others, acquired, but he who possesses a genial disposition will never be without employment, for his every action will carry a value to any firm with whom he is associated.

A purchasing agent of one of our large railroads, after years of experience, stated that he considered the right treatment of salesmen as of great value. He regarded reports by word of mouth from traveling men, who were circulating in many different channels, as of more value oftentimes than those of the trade journals or daily newspapers. He never neglected to make a note of his informant's remarks, which on several occasions enabled him to place orders for a commodity and get ahead of the combination. He cited one case where he wished to be strongly posted on a line of material, and asked his caller if he could tell him where it was to be obtained. The traveler replied that he did not know, but supplemented it by adding that he would ascertain and advise the buyer at an early date, if it were possible to locate the manufacturer. After the salesman left the buyer's office, the latter discharged the matter from his mind, as one of those promises made in good faith, but afterwards forgotten. What was his astonishment, a few days later, to receive a tabulated report giving addresses, and the cost of different grades of material, gained evidently after considerable trouble and research. The narrator continued by saying that he had never given the salesman an order, although he called during a period of several years; but while he made no purchases, he showed the traveler that he was glad to see him, and generally obtained much information. The buyer, however, gave him letters of introduction, and assisted him in interesting a number of good customers.

Courtesy Rewarded.

If a salesman is treated cavalierly he is likely to go away with the feeling of animosity, resolving that he will not offer his best prices in view of the curt treatment on the part of the buyer.

A Case in Point.

One day a traveling man called upon the largest Hardware merchant in a New England town to interest him in a new line of tools. The method of the company the salesman represented was to have each solicitor go around to the big machine shops, book orders at retail prices and in consideration of a given sized requisition turn them over to the merchant, this missionary work assisting in advertising the goods and giving the buyer a profit on the orders received. Following out this plan the salesman sought the merchant, who listened to his proposition and in an abrupt manner instructed him to open his samples on a counter in the rear of the store, adding that he would attend to him at once and give him an order. Placing the trays in the brightest light, so as to show the goods to advantage, the traveler seated himself on a nail keg and proceeded to look around at the miscellaneous stock of Bolts, Screws, Hasps and kindred goods, noting mentally the helter-skelter appearance of the whole.

After waiting half an hour without seeing the merchant the salesman sought the office, where he found an elderly man engaged on his books. Inquiring where the merchant had gone he added that he had a business appointment later in the day.

"Oh," replied the bookkeeper, "he's gone to dinner and won't be back until 3 o'clock."

"I am sorry to hear that, for I have to reach Waterbury this afternoon to keep an appointment," said the salesman. "Suppose you have," ejaculated the office man, "the boss don't care nothing for drummers, for he says they needn't wait if they don't want to," which statement replete with double negatives, left the salesman to wonder if he meant exactly what he said. The traveler's experience told him that the merchant, realizing that he had the representative store, felt that he could be a dictator to those who sought his trade. Taking

ing his business card he wrote this note, which he left with the bookkeeper:

DEAR SIR:
I did not come by appointment,
But I opened my samples by appointment,
And I leave without appointment.
Yours respectfully, B———

When the salesman's train arrived at F——, a lad entered the coach and called out: "Any one by the name of B——?" Acknowledging his name, the subject of this writing was handed a telegram from the Hardwareman asking him to return for the promised order. In those days the New England road was single track, and an eastern bound train was waiting on a siding, which B—— took, and soon was back in ——. He booked an order for the desired quantity, and again took the train for ——.

The Moral.

So far the moral is hidden, but comes to light when it is stated that although the merchant was entitled to 25 and 10 per cent. discount, he was billed at 25 per cent., and while he continued to buy large quantities of the manufacturer's goods, the discount named was all he ever received, notwithstanding the knowledge obtained through business conventions and comparison with Hardware merchants of other cities that they received 10 per cent. better. He wrote numerous letters, threatened not to pay, &c., but the manufacturer was firm. He could either pay 25 per cent. or discontinue his orders.

It will be seen from the above that the salesman sometimes "gets back" at the churlish buyer. It has often been quoted: "He is the best buyer who has been a salesman, for he knows both sides of the fence."

To sum up: Be affable; give the traveler time to tell his story; offer him a cigar, if your house is not too cautious in the expense account, but be assured that a box of cigars is a good asset, for it being so unusual for a buyer to give, you will make an agreeable impression, which will be repaid in good prices and a grateful remembrance.

The buyer who has a reputation for being square, unbiased, and who refuses to receive boxes of cigars, umbrellas and other presents, will soon have the name of working for the company which employs him. He may be called coldblooded, but even between the lines the seller knows that his price will take the order. Such a man will have at heart the interests of his employer. He will do his utmost to win a good name for the house he represents and his whole business conduct will show clean methods.

Steel Measuring Tapes.

The Keuffel & Esser Company, 127 Fulton street, New York, has just added several new articles to its line, which are moderate in price. The goods are well made and accurate and intended for an intermediate class of trade that does not require the finest or more expensive kinds. There are several steel measuring tapes, one of which is the Midget, in 25 and 50 ft. lengths, ¼ in. tape, stout bent leather case, large center, long folding handle, nickeled mountings and graduations that begin at outside end of ring. The outer case dimensions are 2⅜ x ¾ and 2⅞ x ¾ in., each weighing complete 4¼ and 6½ oz., respectively. The Dwarf, likewise a pocket tape, has a steel case with tape ¼ in. wide, similar center and handle, the case and mountings being nickeled. The dimensions and weights of the Dwarf are less than the Midget, and both styles are graduated in tenths and twelfths of feet, inches in sixteenths, according to requirement. The K. & E. mechanics' steel tapes are still lower priced, reference being made to them as very accurate, finely subdivided and made to withstand rough usage or the knocking about received in a tool chest. This style has ⅜ in. tape, metal case nickeled, large center with long, folding handle, and graduations that begin on the line. Those graduated in feet and inches by sixteenths are made in 8, 12, 15 and 20 ft. lengths. Another style has metric graduations on one side only in both 2 and 5 meter lengths. An addition in Iron Clad band chains in both 100 and 200 ft. lengths is also to be noted. The line is of heavy black steel ribbon ¼ in. wide, with etched graduations at every foot; end feet to tenths and hundredths. The reel consists of two strong steel plates 1½ in. wide, carrying a large center for quick and easy winding, with extra long heavy folding brass handle. The width of the side plates is designed to prevent tangling of the line in reeling or unreeling. All metal parts of the reel are heavily nickeled, and the line when reeled up is exposed to the air so that it may dry readily. Two large nickel plated handles for the line are furnished with each chain. There is also a line of Iron Clad band chains in 100 and 200 ft. lengths, plated with white metal, to resist rust, and graduated and numbered at every foot on Babbitt metal. The lines, without reels, of both groups can be supplied at less cost.

The Bristow Distributer.

Frederick Bristow, East Orange, N. J., is putting on the market the device shown in the accompanying illustrations. It is designed to facilitate the filing or arranging of papers, invoices or other documents, and its practical operation and convenience are fully suggested in Fig. 1. The flat base of the device and the oval drum in which the leaves are mounted are made of wood nicely finished and varnished. The leaves are inserted in slots and are readily removable. They are made of heavy gray cardboard, and

Fig. 1.—Bristow Distributer in Use.

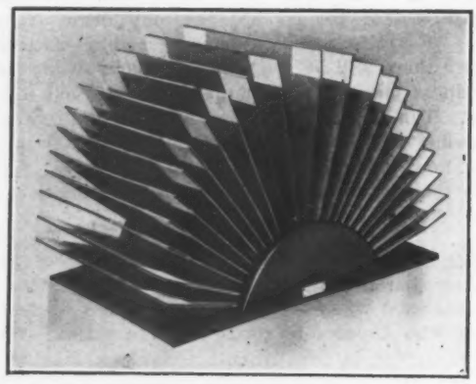
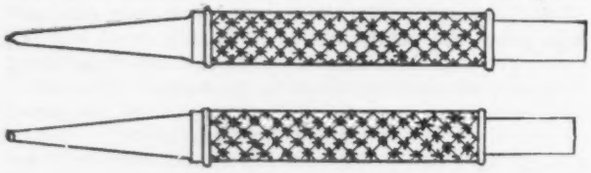


Fig. 2.—The Bristow Distributer.

on the corners have white tabs, as indicated, for letters, numbers or other marking.

Nonjarring Attachment for Tools.

A nonjarring attachment for tools which are struck with a hammer or a mallet is offered by the Nonjarring Automatic Tool Company, Ltd., 53 Conti street, Mobile, Ala. It can be applied to a variety of mechanical tools, and the nail punch and prick punch shown herewith give an idea of the appearance of the tools having this desirable attachment. The attachment consists of a sleeve which fits over a handle having a reduced diameter, around which a coil spring is placed; this spring is stiff enough to hold the tool firmly for use, so that the point



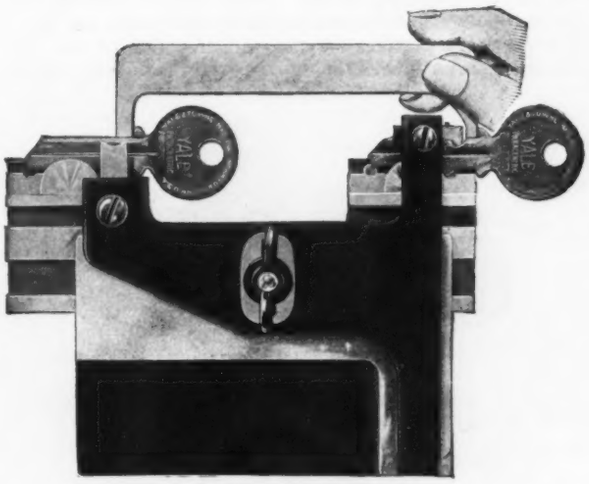
Tools with Nonjarring Attachment.

may be placed exactly on the desired spot and securely held there, but is sufficiently elastic to relieve the hand of any shock when the blow required in its use is administered to the tool head. The coil spring also enables the tool to be pressed firmly against the material so that the workman may be sure that it is held in the right place,

and yet when the shock of the blow is delivered it is taken up by the spring and not felt by the hand or the arm holding the tool. With the attachment no shock is received in the fingers of the workman holding the tool when it is struck with the hammer, affording a grateful relief to the nerves—which is an important consideration in a day's work. In the variety of nonjarring tools made by the company are nail sets, center punches with changeable points, also handles for framing and mortising chisels, cold chisels, shell punches, rivet sets, caulking tools, drift bolts, stone chisels and rock drills, &c.

Harrison Improved Key Jig.

Harrison & Co., 81 New street, New York, have greatly improved their Key Filing Jig, as here illustrated. It is designed for reproducing all kinds of cylinder pin lock keys, regardless of whether they are long, short, narrow, wide, thick or thin, or whether there is one pin, ten pins, or any intermediate number of pins. It is likewise immaterial whether the blanks are corrugated, slotted or bent pin lock keys for such standard makes as Yale, Russell & Erwin, Reading, Corbin, Sargent, Lockwood, Norwalk, &c., any of which may be filed without altering in the slightest the pattern key, and yet reproduce the pattern indefinitely as it exists at the time of duplication. The Jig may be held securely in a vise or similar gripping



Harrison Improved Key Filing Jig, About Half Size.

device and a round file is preferable—not too small—for filing all keys, except the smaller ones for lockers, in which case a triangular or flat file is best. The contours of the sides of the notches are immaterial, provided they are not too straight, which might cause the key to bind in the lock, but the depth of the notches must be accurate. Some keys are inserted from one side of the Jig and some from the other. The illustration shows a front view of the Jig with a Yale paracentric pattern key and blank in position for filing the first notch. In the circular matter accompanying each Jig, giving full directions, are detail illustrations showing plainly some of the leading styles of pin, tumbler cylinder keys in correct position for filing, especially serviceable to janitors, hotel people, and others who are constantly being called upon to furnish duplicate keys. A steel gauge, seen at the top of the illustration, accompanies each Jig and is used for adjusting the key and blank as keys are introduced to the lock cylinder by the upper shoulders; the position of the lower shoulders making no difference. The Jigs are 4⅝ x 3⅝ in. outer dimensions and are guaranteed by the manufacturers.

The Carborundum Knife Stone.

The stone shown in the accompanying illustrations is designed for sharpening all kinds of machine knives while the knife is in position on the machine, such as paper knives, planer knives, leather and cloth cutting knives, &c. The stone is 4 in. in diameter, 1½ in. in thickness, made with one side coarse grit for rough work, to cut away metal, to take out nicks, &c., and one side fine grit for putting a keen, sharp edge on the knife. The groove around the periphery of the stone permits the fingers of the hand to grasp the stone firmly, as in Fig. 2; the fingers are also protected from the edge of the knife. It is remarked by the company that the stone is

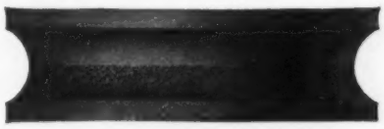


Fig. 1.—The Carborundum Knife Stone.

of convenient size, not too large or too heavy, yet having surface enough for efficient work in sharpening knives. The frequent use of the stone, it is pointed out, will keep the machine knife in good condition without the neces-

Fig. 2.—Manner of Holding Knife Stone.

sity of removing the knife from the machine for grinding. The stone is offered by the Carborundum Company, Niagara Falls, N. Y.

Jackson Solid Center Stem Bits.

The Jackson Mfg. Company, Jackson, Ohio, represented in New York City by Duncan K. Major, 261 Broadway, is manufacturing the Jackson solid center steam augers, auger bits and "ship auger car" bits, one of which is here illustrated. The bits are warranted to bore in any wood, and mention is made by the company of the fine quality of material and care with which the various styles are made. The auger bits are made in regular sizes, from 3-16 to 24-16, inclusive, rising by sixteenths, the ship auger car bits starting at four-sixteenths and running through the same sizes, the car bit differing somewhat in the construction of the head and cutting edges. The various styles of bits are put up in solid sizes, as well as in sets, both in wood boxes and cloth rolls.

Jackson Solid Center Stem Auger Bit.

In order better to facilitate the execution of his orders throughout eastern New England, A. Mugford, the well-known engraver and designer, with main plant and headquarters at Hartford, Conn., has consolidated his Boston and Worcester departments at 19 Church street, Worcester, Mass. Arrangements have been made in Boston for the receipt and transmission of wire and telephone messages and a depository for packages at 564 Washington street, with W. W. Corson & Co. By thus concentrating his selling and manufacturing departments Mr. Mugford will be enabled to give more prompt service and closer personal attention in the execution of orders. At the new address the old staff of artists under the same management which prevailed at Boston will be retained.

Pyro Incandescent Alcohol Lamp Burner.

Edward Miller & Co., Meriden, Conn., and 78-80 Warren street, New York, have put on the market the Pyro Incandescent Alcohol Lamp Burner, here shown, either lamp complete or as a burner for use with any D, No. 3 (1¾-in.) collar lamp. When fitted to lamps already bought or in use, a small vent hole should be made in the fount filler cap for escape of any possible vapors,

Fig. 1.—Parlor Table Lamp, Complete.

Fig. 2.—Pyro Alcohol Lamp Burner.

which is unnecessary in oil burning lamps. This burner is radically different from lampburners designed for burning kerosene, the denatured alcohol being gassified by first igniting a small quantity of the fluid drawn up into the vaporizing ring around the burner, from the fount supply, by pressing twice on the pump thumb piece, B, which is a part of the 3½-in. brass tube extending below the threaded lamp collar. The wick, of soft, fluffy cotton fibre, is 6 in. long, the upper portion being compressed into a round solid, 2 x ⅞ in., inclosed in woven asbestos with a perforated brass top cap, the construction of which makes easy the installation of a new wick, if necessary, after months of use. The alcohol follows the wick into this chamber, where, coming in contact with the previously heated metal, changes it from liquid to gaseous form, insuring practically perfect combustion in the Bunsen tube above. The combination with oxygen in the atmosphere causes the mantle suspended from the forked centre rod to glow with incandescence or brilliant white light of about 45 c. p. or four to five times the illuminating power of a good ordinary gas burner. To light the lamp, the alcohol pumped into the vaporizing ring referred to, is ignited by introducing a lighted match or taper into opening C, which automatically closes by means of the valve lever A. The lamp may be extinguished instantly by moving the lever A sideways. Some of the advantages of using denatured alcohol (on which the usual revenue tax of $2.08 per gallon is remitted), are low cost, in comparison with the volume of illumination, a brilliant, safe, steady white light, cleanliness, greatly decreased heat, &c. These burners are sold regularly fitted to various kinds of lamps, including bracket, parlor, study, harp and marine lamps, or with detachable founts, or as burners simply to be used with other founts or lamps.

Two New Massey Vises.

The two vises shown in the accompanying illustrations are recent additions to the line made by the Massey Vise Company, 176-178 South Clinton street, Chicago. Fig. 1 is designated as the No. 18 lightning grip vise. The distinguishing features of the tool are embodied in

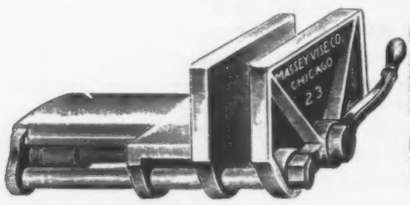


Fig. 1.—Lightning Grip Vise No. 18.

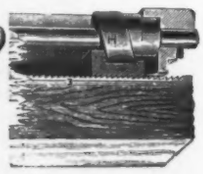


Fig. 2.—Details of Lightning Grip.

the provisions made for a firm and positive grip and ease and rapidity of manipulation. It is represented as different from other types in that the parallel bars of the sliding jaw passing through widely spaced bearings on the stationary jaw are connected at their rear end by a carrier which engages on the outside guide of the stationary jaw on which the cam shaft is set. The vise is

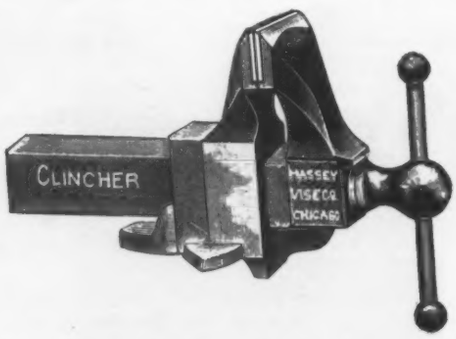


Fig. 3.—Clincher Pattern of Coachmen's Vise.

strengthened materially by the rear bearings provided for the sliding bars. It is also provided with a positive lightning grip, the details of which are shown in Fig. 2, by means of which the work is quickly and firmly fastened between the jaws. Simplicity and durability are important features in this design. Fig. 3 illustrates the clincher pattern of coachmen's vise, recently added to the line which is also described as a strongly built and serviceable tool.

Wing Screw Calks.

The North & Pfeiffer Mfg. Company, New Britain, Conn., has added to its line of screw calks size G. This being the smallest size and having a short screw, is suitable for ladies' or light sporting shoes. The wings do not extend quite to the spike, which can be worn down to the disc before the calk loses its effectiveness. The shape of the wings is such that they aid materially to prevent slipping. The method of attaching this size of calk is the same as with the other sizes—the slotted wrench engaging the wings to attach and remove the calks. These calks will screw into hard leather, but will hold in a soft or wet sole. The broad disc prevents bending over or working through into the foot, and if a shoe runs over or the calks wear off faster in some places than others, they may be taken out and changed around to keep them even and prolong the wear of the whole set. They are put up in boxes containing 50 calks and a wrench, and also in golf sets consisting of 24 calks and a wrench.

Stevens Demi-Bloc Double Barrel Shot Guns.

The J. Stevens Arms & Tool Company, Chicopee Falls, Mass., is beginning to put on the market its new line of double barrel shot guns. They are manufactured by a new method which the company styles the Demi-Bloc system and refers to as a radical departure in the manufacture of double barrel guns. By this method the barrel and lug are compressed and forged in one piece, while at the same time the breech mechanism is given exceptional strength. A glance at Figs. 2 and 3 will enable the reader to understand the features of the system, Fig. 2 showing the compressed forged steel barrels and Fig. 3 the barrels ready to braze, the sides of the lugs being milled perfectly true. It is declared that the barrels when brazed together are of necessity absolutely straight. At the same time a wall of metal of equal diameter all around is left around the chamber so that the guns can be made with a strong breech, and are calculated to shoot a heavy load. The brazing of the barrels, loop and extension rib is all in one process. The solid top snap, Fig. 4, is referred to as another point of merit, operating as it does with the rotary cross bolt to make the strongest possible fastening and prevent the guns from shaking loose. Other features of the guns include a rotary compensating bolt and check hook slot, Fig. 5, with positive check hook, Fig. 6, and a new style fore-end, Fig. 7, which is easily removed and is so shaped as to prevent its coming off in the brush. The Demi-Bloc guns are, of course, made in several grades and varieties and with the usual options. They are adapted to any standard make of shell loaded with either black or smokeless powder. The gun illustrated in Fig. 1, No. 385, is of exceptionally fine grade and finish throughout, and lists at $60.

Fig. 1.—Stevens Double Barrel Hammerless Gun No. 385.

Fig. 2.—Compressed Forged Steel Barrels, Demi-Bloc System.

Fig. 3.—Barrels Ready to Braze.

Fig. 4.—Solid Top Snap.

Fig. 5.—Rotary Compensating Bolt and Check Hook Slot.

Fig. 6.—Check Hook.

Fig. 7.—New Style Fore-End.

The Keen Kutter Grindstone.

The Simmons Hardware Company, St. Louis, Mo., is offering the grindstone shown herewith. The stone is made of selected Berea grit, mounted on an extra braced and bolted tubular frame. The rods and bolts are threaded and accurately fitted, while the bearings are furnished with steel balls. The frame is finished in black and red paint. The rigidity and firmness of the frame is emphasized.

Fig. 1.—The Keen Kutter Grindstone.

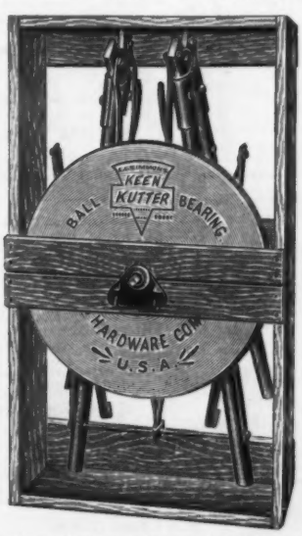


Fig. 2.—Keen Kutter Stone Crated for Shipment.

Colt's Police Positive Special Revolver.

The revolver shown in the accompanying illustration is a recent addition to the line of the Colt's Patent Fire Arms Mfg. Company, Hartford, Conn. It is called the Police Positive Special, and is described as a powerful and compact but exceptionally convenient arm adapted for the .32-20 rifle cartridge or the .38 Long Colt and S. & W. special cartridges. Although carrying this powerful ammunition, the gun weighs but 22 ounces, making it unusually light and handy for the pocket. It is made of the finest selected material, carefully tested and assembled, and is fully guaranteed by the company for use with standard factory loaded ammunition, either black or

Colt's Police Positive Special Revolver.

smokeless powder. It is equipped with all the latest improvements, including the Colt positive lock, which prevents accidental discharge, simple and strong limb work and cylinder revolving to the right with reverse action of hand and cylinder bolt, insuring perfect alignment of cylinder and barrel. The cylinder notches are placed in the strongest part of the cylinder, thus avoiding weakening the chambers. The revolver also has the swivel nose firing pin, double leaf mainspring and other features which tend to smooth, sure action and durability without adding complications to the mechanism. A thumb latch of new design adds to the comfort of the full Colt grip, which is said to be particularly valuable in a small pocket arm as an aid to accurate shooting.

Newform Garment Hangers.

The Hardware Supply Company, Grand Rapids, Mich., is manufacturing the Newform line of garment hangers, three varieties of which are shown in the accompanying illustrations. The goods are made for first class trade and are well finished in polished nickel. Fig. 1 illustrates hanger No. 2, intended for a coat and two pairs of trous-

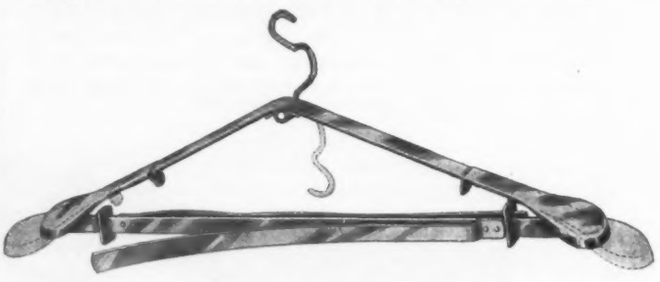


Fig. 1.—Newform Hanger No. 2, for Coat and Two Pairs of Trousers.

ers. The lower ends of the trousers legs are slipped under the flat springs and then fastened by sliding loops.

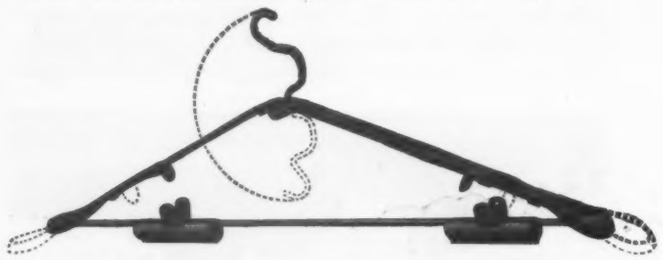


Fig. 2.—Newform Hanger No. 3, for Men's or Women's Clothing.

The shoulder pads are adjustable so as to fit coats of any size. Fig. 2 shows hanger No. 3, which is suitable either for men's or women's garments, the springs on the lower

Fig. 3.—Newform Hanger No. 5, Accommodating Two Pairs of Trousers.

bar being adapted for either trousers or skirts. Fig. 3 shows hanger No. 5, which is for trousers, and is made double to hold two pairs.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	₱ gal.
Linseed, State and Western, raw	@45
City, Boiled	@46
City, Raw	@45
Raw, Calcutta, in bbls	@71
Lard, Prime, Winter	@70
Extra No. 1	@52
No. 1	@48
Cotton-seed, Crude, f.o.b. mill	@..
Summer Yellow, prime	@37½
Summer White	39½@40
Yellow Winter	@41½
Tallow, Acidless	@58
Menhaden, Brown, Strained	@36
Southern	@..
Light Strained	@36
Bleached Winter	@39
Ex. Bleached Winter	@41
Cocoanut, Ceylon	₱ lb 6½@ 6½
Cochin	₱ lb 6⅞@ 7⅛
Cod, Domestic, Prime	@40
Newfoundland	@42
Red, Elaine	@40
Saponified	₱ lb 5¾@ 5⅞
Olive, Yellow	@90
Neatsfoot, Prime	@58
Palm, Lagos	₱ lb 5⅝@ 6

Mineral Oils—

	₱ gal.
Black, 29 gravity, 25@30 cold test	@13½
29 gravity, 15 cold test	13½@14
Summer	12½@13
Cylinder, light filtered	20½@21
Dark, filtered	@19
Paraffine, 903-907 sp. gravity	14½@15
903 sp. gravity	13½@14
883 sp. gravity	@11½
Red	13½@14

Miscellaneous—

Barytes:	
White, Foreign	₱ ton $18.50@20.50
Amer., floated	₱ ton 18.00@20.00
Off color	₱ ton 13.00@16.50
Chalk, in bulk	₱ ton 3.00@ 3.40
China Clay, Imported	₱ ton 11.50@18.00
Cobalt, Oxide	₱ 100 lb 1.45@ 2.60
Whiting, Commercial	₱ 100 lb 42 @52
Gilders	₱ 100 lb .55@ .60
Ex. Gilders	₱ 100 lb .60@ .65

Putty, Commercial—₱ 100 lb

In bladders	$1.70 @1.80
In bbls. or tubs	1.20 @1.45
In 1 lb to 5 lb cans	2.65 @2.95
In 12½ to 50 lb cans	1.50 @1.90

Spirits Turpentine—₱ gal.

In Oil bbls	39 @39½
In machine bbls	39½@40

Glue—

	₱ lb
Cabinet	12 @15
Common Bone	7½@ 9
Extra White	18 @24
Fish, liquid, 50 gal. bbls., per gallon	60 @1.20
Foot Stock, White	12 @14
Foot Stock, Brown	9 @11
German Common Hide	10 @12
German Hide	12 @18
French	10 @40
Irish	13 @16
Low Grade	10 @12
Medium White	14 @17

Gum Shellac—

	₱ lb
Bleached, Commercial	24 @28
Bone Dry	30 @35
Button	30 @40
Diamond I	46 @47
Fine, Orange	34 @35
A. C. Garnet	27 @28
G. A. I.	20 @21
Kala Button	18 @19
D. C.	47 @48
Octagon B	39 @40
T. N.	25 @26
V. S. O.	46 @47

Colors in Oil—

	₱ lb
Black, Lampblack	12 @14
Blue, Chinese	36 @46
Blue, Prussian	32 @36
Blue, Ultramarine	13 @16
Brown, Vandyke	11 @14
Green, Chrome	12 @16
Green, Paris	@24
Sienna, Raw	12 @15
Sienna, Burnt	12 @15
Umber, Raw	11 @14
Umber, Burnt	11 @14

White and Red, Lead &c.—

	₱ lb
Lead, English white, in Oil	10½@10⅝
Lead, American White:	
Dry and in Oil, 100, 250 and 500 lb kegs	7
Dry and in Oil, 25 and 50 lb kegs	7¼
Dry and in Oil, 12½ lb kegs	7½
In Oil, 25 lb tin pails	7½
In Oil, 12½ lb tin pails	8
In Oil, 1, 2, 3 and 5 lb tin cans, ass't	9
Red Lead and Litharge:	
In 100 lb kegs	7
In 25 and 50 lb kegs	7¼
In 12½ lb kegs	7½
In lots of less than 500 lbs, ½¢ ₱ lb advance over above prices of White and Red Lead and Litharge.	
Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.	

Zinc, Dry—

	₱ lb
American, dry	5¼@ 5⅝
Red Seal (French process)	6¾@ 7
Green Seal	7¼@ 7½
German Red Seal (French process)	6⅝@ 7
Green Seal	7¼@ 7⅝
White Seal	7⅞@ 8¼
French, Red Seal	8⅝@ 8⅞
Green Seal	10⅝@10⅝

Dry Colors—

	₱ lb
Black, Carbon	6¼@10
Black Drop, American	3½@ 5
Black Drop, English	5 @15
Black, Ivory	16 @20
Lamp, commercial	4 @ 6
Blue, Celestial	4 @ 6
Blue, Chinese	31 @33
Blue, Prussian	29 @31
Blue, Ultramarine	3½@15
Brown, Spanish	½@ 1
Carmine, No. 40	$3.10@3.25
Green, Chrome, ordinary	3½@ 5
Green, Chrome, pure	17 @25
Ocher, American	₱ ton $8.50@16.00
American Golden	2½@ 3¼
French	1¼@ 2
Foreign Golden	3 @ 4
Orange Mineral, English	10 @12
French	12¾@13
German	12 @13
American	9 @10
Red, Indian, English	4½@ 6
American	3 @ 3¼
Red, Turkey, English	4 @10
Red, Tuscan, English	7 @10
Red, Venetian, Amer.	₱ 100 lb $0.50@1.25
English	₱ 100 lb $1.15@1.60
Sienna, Italian, Burnt and Powdered	3 @ 9
Italian, Raw, Powdered	3 @ 7
American, Raw	1½@ 2
American Burnt and Pow'd.	1½@ 2
Talc, French	₱ ton $18.00@25.00
American	₱ ton 15.00@25.00
Terra Alba, French	₱ 100 lb .90@ 1.00
English	₱ 100 lb .80@ 1.00
American	₱ 100 lb, No. 1. .75@ .80
American	₱ 100 lb, No. 2. .60@ .65
Umber, T'key, Bnt, & Pow.	2¾@ 3
Turkey, Raw and Powdered	2¾@ 3
Burnt, American	1½@ 2
Raw, American	1½@ 2
Yellow, Chrome, Pure	13¾@15
Vermilion, American Lead	7 @25
Quicksilver, bulk	65 @..
Quicksilver, bags	@68
English, Imported	65 @70
Chinese	$0.90@1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Columbian and Domestic....33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent....35%
Taplin's Perfection....35%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anti—Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs ....$2.00@$3.00

Anvils—American—
Eagle Anvils....℔ lb @8 ¢
Hay-Budden, Wrought....9½@9¾ ¢
Trenton ....℔ lb 9½@9¾ ¢

Imported—
Swedish Solid Steel Sisco, Superior, ℔ lb....10@10½ ¢
Peter Wright & Sons, ℔ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

Anvil, Vice and Drill—
Millers Falls Co., $18.00....15&10%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Livingston Nail Co....10%

Augers and Bits—
Com. Double Spur....75&10@80%
Jennings' Patn., Bright.65&10@70%
Black Lip or Blued...65@65&5%
Boring Mach. Augers....70%
Car Bits, 12-in. twist....40&10%
Ford's Auger and Car Bits....40&5%
Ft. Washington Auger Co., Conard's 35%
Forstner Pat. Auger Bits....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list....50%
Russell Jennings'....25&10&2½%
L'Hommedieu Car Bits....15%
Mayhew's Countersink Bits....45%
Pugh's Black....20%
Pugh's Jennings' Pattern....35%
Snell's Auger Bits....60%
Snell's Bell Hangers' Bits....60%
Snell's Car Bits, 12-in. twist....60%
Snell's King Auger Bits....50%
Swan's ....65&10@70%
Swan's, Jennings' Pattern....50%
Wright's Jennings' Bits....50%

Bit Stock Drills—
See *Drills, Twist.*

Expansive Bits—
Clark's Pattern, No. 1, ℔ doz., $26; No. 2, $18....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00....60&10%
Swan's 60%

Gimlet Bits—
Per gro.
Common Dbl. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75

Hollow Augers—
Bonney Pat., per doz..$5.50@6.00
Ames ....20&10%
Universal 20%

Ship Augers and Bits—
Ship Augers....40&10@—%
Ford's ....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's 6%
Watrous' ....33⅓&7½%
Snell's 18%

Awl Hafts—See *Handles, Mechanics' Tool.*

Awls—
Brad Awls:
Handled ....gro. $2.75@3.00
Unhdld, Shldered..gro.63@66¢
Unhandled, Patent..gro.66@70¢
Peg Awls:
Unhandled, Patent..gro. 31@34¢
Unhdld, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket.gro.$11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights: Per doz.
First Quality....$4.75@5.00
Second Quality....$4.25@4.50
Double Bit, base weights:
First Quality....$7.00@7.50
Second Quality....$6.50@6.75

Axle Grease—
See *Grease, Axle.*

Axles—*Iron or Steel.*
Concord, Loose Collar...4¼@4½¢
Concord, Solid Collar....4½@5 ¢
No. 1 Common, Loose...3½@4¼ ¢
No. 1½ Com., New Style.4¼@4¾¢
No. 2 Solid Collar....4¼@4¾¢
Half Patent:
Nos. 7, 8, 11 and 12....70%
Nos. 13 to 14....70%
Nos. 15 to 18...70&10@70&10&5%
Nos. 19 to 22...70&10@70&10&5%

Boxes, Axles—
Common and Concord, not turned ....lb., 5@6¢
Common and Concord, turned, lb., 6@7¢
Half Patent....lb., 9¼@10¢

Bait—Fishing—
Hendryx:
A Bait....20%
B Bait....25%
Competitor Bait....20&5%

Balances—Sash—
Caldwell new list....50&10%
Pullman ....50&10%

Spring—
Light Spring Balances.60@60&5%
Chatillon's:
Light Spg. Balances....50@50&10%
Straight Balances....40@40&10%
Circular Balances....50&10%
Large Dial....30%

Barb Wire—See *Wire, Barb.*

Bars—Crow—
Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢

Towel—
No. 10 Ideal, Nickel Plate..℔ gro. $8.50

Beam, Scale—
Scale Beams....40%
Chattillon's No. 1....30%
Chatillon's No. 2....40%

Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned $0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned $1.20
No. 10 Wire Tinned....℔ doz. $1.50

Beaters Egg—
Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $4.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 132, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

Bellows—
Blacksmith, Standard List:
Split Leather....60&10@—%
Grain Leather....50@50&10%

Hand— Net Prices.

Inch..	*6*	*7*	*8*	*9*	*10*
Doz..	*$5.00*	*5.50*	*6.00*	*6.50*	*7.50*

Molders— Net Prices.

Inch..	*10*	*12*	*15*	*16*
Doz..	*$7.50*	*9.00*	*12.00*	*15.00*

Bells—Cow—
Wrought Cow Bells....75%
Jersey ....75&10%
Texas Star....50%

Door—
Home, R. & E. Mfg. Co.'s....55&10%

Hand—
Polished, Brass....6½@60&10%
White Metal....60@60&10%
Nickel Plated....50&10%
Swiss ....50&10%
Cone's Globe Hand Bells....33⅓@33⅓%

Miscellaneous—
Farm Bells....lb., 2¼@2½¢
Church and School....60@60&10%

Belting—Leather—
First Quality, Ex. Hy., Strictly Short Lap....60&10%
Standard ....70&10@70&10&5%
Light Double....75&10%
Cut Leather Lacing..50&10@60%
Leather Lacing Sides, per sq. ft. 22@23¢

Rubber—
Competition (Low Grade)..... 70&10@75%
Standard ....60&10@70%
Best Grades....40@50%

Bench Stops—
See *Stops, Bench*

Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters 20%

Bicycle Goods—
John S. Leng's Son & Co.'s 1908 list: Chain, Parts, Spokes....—% Tubes 60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks—Tackle—
Common Wooden....75@75&5%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior 30%
See also Machines, Hoisting.

Boards, Stove—
Paper and Wood Lined....55%
Embossed 55%

Boards, Wash—
See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co....33⅓&10%

Bolts
Carriage, Machine, &c,—
Common Carriage (cut thread):
⅝ x 6 and smaller..75&5@—%
Larger and longer....70@—%
Phila. Eagle, $3.00 list...80@—%
Bolt Ends....70@—%
Machine (Cut Thread):
⅝ x 4 and smaller..75&10@—%
Larger and longer....70@—%

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knobs:

Inch ...	*3*	*4*	*5*	*6*	*8*
Per doz..	*$0.30*	*.35*	*.45*	*.60*	*.80*

Cast Iron Spring Foot, Jap'd:

Inch	*6*	*8*	*10*
Per doz....	*$1.20*	*1.50*	*2.25*

Cast Iron Chain, Flat, Japanned:

Inch	*6*	*8*	*10*
Per doz....	*$1.00*	*1.40*	*1.65*

Cast Iron Flat Shutter, Jap'd, Brass Knobs:

Inch	*6*	*8*	*10*
Per doz....	*$0.75*	*.95*	*1.25*

Wrought Barrel Japanned, 80&10@80&10&5%
Barrel Bronzed....60&10%
Spring ....70&10@70&10&10%
Shutter ....50&5@50&10&5%
Square Neck....75@75&10%
Square ....70&10&10@80%
Ives' Patent Door....55%
Ives' Wrought Metal....45%

Expansion—
F. H. Evans' Crescent....40@60%
Richards Mfg. Co....55&10%
Star Expansion Bo't Co.:
Star, Lag Screw Type...60&10&5&2½%
Star, Wood Screw Type....40%
Star, Machine, Sing'e Wedge....60%
Star, Machine, Doub'e Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double....60%
Style No. 1, Single....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw....66⅔%

Plow and Stove—
Plow ....65&5@70%
Stove ....85@85&5%

Tire—
Common Iron....8@8&5%
Norway Iron....80@80&5%
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99....80%
Norway Phila., list Oct. '84....80%
Eagle 82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts....72½%

Borers, Bung—
Borers Bung, Ring, with Handle:

Inch.....	*1¼*	*1½*	*1¾*	*2*
Per doz...	*$4.80*	*5.60*	*6.40*	*8.00*
Inch.....			*2¼*	*2½*
Per doz.....			*$8.65*	*11.50*

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each....25%

Boxes, Mitre—
C. E. Jennings & Co....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme ....15&10%
Perfection 40%
Seavey 45%

Braces—
Common Ball, American....$1.50
Barber's ....50&10&10@60&10%
Fray's Genuine Spofford's....60%
Fray's No. 61, 166, 206, 614....50%
C. E. Jennings & Co....50&5%
Mayhew's Ratchet....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces....25&10%
P., S. & W. Co., Peck's Pat....60&10%

Brackets—
Wrought Steel..75&10@75&10&10%
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel....75@75&10%
Griffin's Folding Brackets....70&10%
Taplin Victor Handy Egg Beater Bracket ....℔ doz. $1.50

Bright Wire Goods—
See *Wire and Wire Goods.*

Broilers—
Kilbourne Mfg. Co....75&20%
Wire Goods Co....75%

Buckets, Galvanized—

M'fr's list, price per gross.	*Quart..*	*10*	*12*	*14*
Water, Reg...	*26.85*	*29.50*	*33.50*	
Water, Hvy...	*45.35*	*48.00*	*52.00*	
Fire, Rd. Btm..	*32.00*	*34.65*	*38.65*	
Well	*37.35*	*41.35*	*45.35*	

10&7½&5&5%

Bull Rings—See *Rings, Bull.*

Butts—Brass—
Wrought, High List, Oct. 26,'06.55%
Cast Brass, Tiebout's....40%

Cast Iron—
Fast Joint, Broad....40&10@50%
Fast Joint, Narrow...40&10@50%
Loose Joint....70&10@75%
Loose Pin....70&10@75%
Mayer's Hinges....70@70&5
Parliament Butts....70@70&5

Wrought Steel—
Bright
Light Narrow, Light Reversible ....70&—
Reversible and Broad..70&5%
Loose Joint, Narrow, Light Inside Blind, &c....70%
Back Flaps, Table Chest..65% Japanned.
Light Narrow, Loose Pin, 40&5%
Light Narrow, Ball Tip..60%
Broad ....40&5%
Steeple Tipped....70%
Ball Tipped....70%

Extra, 10 —

Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800.....30%
Hendryx Enameled.....35%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong, per lb.....4@4½¢
Sharp, 1 prong, per lb...4½@5¢
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¾¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel.....4¾¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

Can Openers—

See *Openers, Can.*

Caps, Percussion—

Eley's E. B.....52@55¢
G. D.....per M 34@35¢
F. L.....per M 40@42¢
G. E.....per M 48@50¢
Musket .....per M 62@63¢

Primers—

Berdan Primers, $2 per M..20&5%
Primer Shells and Bullets..15&10%
All other primers per M.$1.52@1.60

Carpet Stretchers—

See *Stretchers, Carpet.*

Cartridges—

Blank Cartridges:
32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
B. B. Caps, Con. Ball, Swgd.$1.90
B. B. Caps, Round Ball.....$1.40
Central Fire.....25%
Target and Sporting Rifle.15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting.....50%
Rim Fire, Military.....15&5%

Casters—

Bed .....65&10@70%
Plate .....60&5@60&10%
Philadelphia .....70&1.@75%
Acme, Ball Bearing.....30%
Gem (Roller Bearing)....70&10&10&5%
Steel Gem (Roller Bearing).....70%
Standard Ball Bearing.....45%
Yale (Double Wheel) low list...40&10%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Proof Coil—

American Coil, Straight Link:

3-16	¼	5-16	⅜	7-16	½	⅝
$8.15	5.55	4.60	3.95	3.75	3.65	3.55

⅝-⅞-1 1⅛ to 1¼ inch.
$3.45 3.55
In cask lots, deduct 25¢.
German Coil.....60@60&5%
German Pattern Coil:
6-0 to 1.....70&5@70&10%
2 and 3..60&10@10@60&10@10&5%
4, 5 and 6.....50&10@50&10@5%

Halter—

Halter Chains.....60&5@60&10%
German Pattern Halter Chains, list July 24, '97....60&10&5@70%
Covert Mfg. Co.:
Halter .....35&5%

Cow Ties—

See *Halters and Ties.*

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6½—6-3, Straight, with ring.$28.00
6½—6-2, Straight, with ring.$29.00
6½—8-2, Straight, with ring.$32.00
6½—10-2, Str'ght, with ring.$37.00
NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.
Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron .....60&10&7½%
Brass 65%
Safety and Plumbers' Chain.75%
Gal. Pump Chain....lb., 4½@5%
Bridgeport Chain Co.:
Triumph Halter and Coil.35&2½@40%
Triumph Dog.....50&10@60%
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion 40%
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2½@40%
Niagara Dog Leads and Kennel Chains .....45@50&5%
Wire Goods Co.:
Dog Chain.....70%
Universal Dbl.-Jointed Chain....70%

Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered .....60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft. .....$2.00@$5.00
Sash Ribbon Attachments, per set..8¢

Chalk—

Carpenters' Blue.....gro., 50¢
Carpenters' Red.....gro., 50¢
Carpenters' White.....gro., 40¢

Checks, Door—

Bardsley's 45%
Pullman, per gro.....$54.00
Russwin 33⅓%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools 20%
Machinists' and Pipe Fitters' Chests, Empty.....45%
Tool Cabinets.....45%
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½%

Chisels—Socket Framing and Firmer

Standard List.....80&10@—%
Buck Bros.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
Swan's .....66⅔@70%
L. & I. J. White & Co.....30@30&5%

Tanged—

Tanged Firmers.....30&5@35%
Buck Bros.....30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

Cold—

lb.
Cold Chisels, good quality.13@15¢
Cold Chisels, fair quality..11@12¢
Cold Chisels, ordinary.... 9@10¢

Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck.....40
Beach Pat, each $8.00.....35&5%
Empire 25%
Blacksmiths' 25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Lathe Chucks:
Independent 35%
Universal, Reversible Jaws.....35%
Universal, Com. Style Jaws.....40%
Combination, Reversible Jaws....35%
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws 25%
Geared Scroll Chucks.....25%
Drill Chucks, New Model, 25%; Geared Pattern, 25%; Skinner Patent, 25%; Positive Drive.....40%
Planer Chucks.....20
Standard 45%
Drill Press Vises.....30%
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 .....30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%
Whitaker Mfg. Co.:
National Drill.....25%

Clamps—

Adjustable Hammers.....20@20&5%
Carriage Makers', Star, P., S. & W. Co. 50%
Bealy, Parallel.....35⅓&10%
Myers' Hay Rack.....50%
Lineman's Swedish Neverturn.....66⅔%
Wood Workers' Hammers.....40&10%
Saw Clamps, see Vises, Saw Filers'

Cleaners, Drain,

Iwan's Champion, Adjustable.....50%
Iwan's Champion, Stationary.....40%

Sidewalk—

Star Socket, All Steel..℔ doz. $4.05 net
Star Shank, All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30%
L. & I. J. White Co.....30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Roll Bearing Horse, each.....$6.75
Stewart's New Model Sheep Shearing Machine, each.$12.75
Stewart Enclosed Gear Shearing Machine, No. 5, each..$9.75
} 20%

Clips, Axle—

Regular Styles, list July 1, '05, 80&80&10%

Cloth and Netting, wire

—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c 75%
Compression Bibbs.....70%

Coffee Mills—

See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list 40%

Compasses, Dividers, &c.

Ordinary Goods.....70&10@75%

Conductor Pipe,—

L. C. L. to Dealers:

	Gal. Steel.	Charcoal.
Northeastern.	*70&10%*	*50&10&7½%*
Eastern.....	*75%*	*50&10&7½%*
Pittsburgh ..	*75&10&5%*	*60%*
Central	*75&10%*	*60%*
Northwestern.	*75&7½%*	*60%*
Western	*70&12½%*	*50&12½%*
Tennessee ...	*70&10%*	*50&12½%*
Southern	*70%*	*50&12½%*
Southwestern.	*70%*	*50&5%*

Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

L. & G. Mfg. Co.:

Gal.....	2	3	4	6	8
Galvanized,ea.	$1.85	$2.00	$2.25	$2.90	$3.90
Galvanized, Lined, side handles, Gal.....	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$4.15
White Enameled.....10%					
Agate Lined.....10%					

Coppers' Tools—

See *Tools, Coopers'.*

Coppers, Soldering—

Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair.....22¢

Cord—Sash—

Braided, Drab.....lb. 35¢
Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.
Cable Laid Italian, lb., No. 18.37¢
Italian, lb., A, No. 18, 25¢; B, 22¢
Common India.....lb., 11@11½¢
Cotton Sash Cord, Tw'ted..18@20¢
Patent Russia.....lb....20¢
Cable Laid Russia.....lb...21¢
India Hemp, Br'd'd.....lb...21¢
India Hemp, Twisted...lb..13@14¢
Patent India, Twisted..lb...17¢
Pearl Braided, cotton, No. 6, ℔ lb., 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....℔ lb 23¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...℔ lb 40¢
Massachusetts, Drab....℔ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
} 15%
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

Wire, Picture—

Full Length.....90@—%
Short Length.....90&20@—%
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord 90%

Cradles—

Grain 57½%

Crayons—

White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5½ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light $5.00

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden.....50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847.℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....℔ doz. $3.00
Wm. Rogers & Son.....℔ doz. $2.50

Cutters—Glass—

H. H. Mayhew Co.....40%
Red Devil.....60%
B. Mfg. Co.....40%
Woodward 50%

Meat and Food—

American 30%

Nos.	401	402	403	404	405	406	407
Each ...	$5	$7	$10	$12	$25	$50	$60

Enterprise:

Nos.....	5	10	12	22	32	
Each ...	$2	$3	$2.75	$4.50	$6	25@25&7½%
No. 202, $1.50.....						40&7½%

P. S. & W. Co.:
Ideal .....40@40&5%
Hales .....60&5%
Little Giant.....℔ doz. 40@50%

Nos..	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

New Triumph No. 605, ℔ doz. $24.00.....40%
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $12.00.....45&10&10%
$15.00 $18.00
Enterprise Beef Shavers.....25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater .....℔ doz. $4.00

Tobacco—

All Iron, Cheap...doz, $4.25@4.50
Enterprise .....25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 .....40%

Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00.....25%
Samson, ℔ doz., $34.00.....25%
Iwan's Pat. Post Hole and Well Auger 40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. $8.50
Split Handle Post Hole Diggers, ℔ doz., $7.50
Hercules Pattern, ℔ doz.....$9.50
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Crucible Steel Post Hole Diggers 60%

Dividers—See *Compasses.*

Drawing Knives—

See *Knives, Drawing.*

Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

Drills and Drill Stocks—

Blacksmith's Common Drilling Machines .....$1.50@1.75
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....33⅓%
C. & C. Ratchet.....25%
Reversible Ratchet Die Stocks....25%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills,33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved .....40@40&5%
Ratchet, No. 012.....40@40&5%
Ratchet, Celebrated.....40@40&5%
Ratchet, Whitney's, P., S. & W., 40&10@50%
Whitney's Adjustable, No. 10, $12.00 33⅓%

Twist Drills—

Bit Stock.....70@70&5%
Taper and Straight Shank, 60&10@70%

Drivers, Screw—

Screw D'ver Bits, per doz..45@50¢
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....50%
Buck Bros.' Screw Driver Bits.....30%
Champion 50%
Disston's 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, ℔ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540 40&10%

Eave Trough, Galvanized—

Territory...	Gal. Steel.	Charcoal Iron.
Northeastern.	*75&10&5%*	*60&20%*
Eastern.....	*80&2½%*	*60&20%*
Pittsburgh ..	*80&20%*	*65&10%*
Central ..	*80&10&10&2½%*	*65&10%*
Northwestern.	*80&10&10%*	*65&10%*
Western	*80&10%*	*60&10&5%*
Tennessee ...	*80&5%*	*60&10&5%*
Southern	*80%*	*60&10&5%*
Southwestern.	*75&10&2½%*	*60&5%*

Terms.—2% for cash. Factory shipments generally delivered.
Note.—Lower prices are made in some sections.
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories: Galv. Steel and Galv. C. I. Standard Gauge.....85@85&10%
No. 26.....50%
No. 24.....25%
No. 22.....10%

Elbows, Stove Pipe—

Edwards, Standard Blue....40&10&10%
Edwards, Royal Blue.....40&10&10%
Reeves, Dover, Flat Crimp..40&10&5%

Emery, Turkish—

	¼ to 4:	½ to 220:	Flour.
Kegs .....lb.	*5 ¢*	*5½ ¢*	*3½ ¢*
½ Kegs.....lb.	*5½ ¢*	*5¾ ¢*	*3¾ ¢*
¼ Kegs.....lb.	*5½ ¢*	*6 ¢*	*4 ¢*
10-lb. cans, 10 in case....	*6½ ¢*	*7 ¢*	*6 ¢*
10-lb. cans, less than 10.....	*10 ¢*	*10 ¢*	*8 ¢*
Less quantity..	*10 ¢*	*10 ¢*	*8 ¢*

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extensions, Bit—

Ford's Auger Bit Extensions....40&5%

Extractors, Lemon Juice—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50%
Walling's 50%
Upson's Patent.....40%

Cord and Weight—
Ives and Titan.....33⅓%

Corrugated—
Acme Corrugated Fasteners.....70%

Faucets—
Cork Lined.....50&10@60%
Metallic Key, Leather Lined, .. 60&10@70%
Red Cedar.....40&5@40&10&5%
Petroleum .....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star 60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ℔ doz., $36.00.....40&10%
Lane's, ℔ doz., $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—
See *Plates, Felloe.*

Files— Domestic—
List Nov. 1, 1899.
Best Brands.....70&10@75&10%
Standard Brands.....75&10@80%
Lower Grade....75&10&10@80&10%
Gold Medal.....70%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%

Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—
Net Prices:

Inch	*15*	*17*	*19*	*21*
Per doz.	*$3.60*	*3.85*	*4.15*	*4.65*
	$4.00	4.40	4.75	5.50	6.50..30%
In.	15	17	19	21	24
P., S. & W. Co.					.25%
Reading Hardware Co.					.60%

Fodder Squeezers—
See *Compressors.*

Forks—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley....40%
Plated.—See Spoons.

Frames— Wood Saw—
White, S'g't Bar, per doz. 75@80¢
Red, S'g't Bar, per doz. $1.00@1.25
Red, Dbl. Brace, per doz. $1.40@1.50

Freezers, Ice Cream—

Qt.	*1*	*2*	*3*	*4*	*6*
Each	*$1.25*	*$1.60*	*$1.90*	*$2.20*	*$2.80*

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*
Hemp $2.75
Cotton 3.20
Waterproof Sgl. Taped.. 3.65
Waterproof Dbl. Taped.. 4.40
Waterproof Tpl. Taped.. 5.15
10&2½%

Gates, Molasses and Oil—
Stebbins' Pattern.....80@80&5%

Gauges—
Marking, Mortise, &c..50@50&10%
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
Wire, P. S. & W. Co.....33⅓%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window
See *Trade Report.*

Glasses, Level—
Chapin-Stephens Co.....65@65&10%

Glue, Liquid Fish—
Bottles or Cans, with Brush, 25&10@50%
Elwell's 40%

Grease, Axle—
Common Grade...gro. $6.00@$6.50
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ℔ doz., 1 lb. $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alupdum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ℔ inch, ℔ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

Halters and Ties—
Cow Ties.....65@65&10%
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

Hammers—
Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔@5%
Blacksmiths' 50%
Fayatte R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ℔ gro....$7.75

Heavy Hammers and Sledges—
Under 3 lb., per lb., 50¢...80&10%
3 to 5 lb., per lb., 40¢...80&10&10%
Over 5 lb., per lb., 30¢.....
Over 5 lb., per lb., 30¢.80&10&10%

Handles—
Agricultural Tool Handles—
Axe, Pick, &c....60&10@60&10&5%
Hoe, Rake, &c.....40%
Fork, Shovel, Spade, &c.:
Long Handles.....40%
D Handles.....40%

Cross-Cut Saw Handles—
Atkins' 40%
Champion 50%
Disston's 50%

Mechanics' Tool Handles—
Auger, assorted...gro. $3.00@$3.50
Brad Awl.....gro. $1.65@$1.75
Chisel Handles, Ass'd, per gro.:
Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40
Socket Firming, Apple, $1.75@ $1.95; Hickory.....1.60@1.75
Socket Framing, Hickory, $1.60@$1.75
File, assorted.....gro. $1.30@$1.40
Hammer, Hatchet, &c., 60&10@60&10&5%
Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished.....65@75¢
Plane Handles:
Jack, doz., 30¢; Fore, doz...45¢
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ℔ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ℔ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ℔ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 in., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ℔ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ℔ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ℔ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ℔ doz, R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ℔ doz., 12 to 14 in., $2.00.
Extra 10&7½%

Hangers—
NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator 30%
Railroad 50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 65&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $1.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Trolley Hangers and track ..50%
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction 60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B, D, No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B, D, No. 20.....50&10%
Trolley B, D, No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Myers' Stayon Hangers.....60%
Extra 5@10% often given.

Hangers— Garment—
Pullman Trouser, ℔ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....℔ gro. $9.60

Gate—
Myers' Patent Gate Hangers, ℔ doz., net 50%

Joist and Timber—
Lane Bros. Co.....35%

Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ℔ doz..60%

Hatchets—
Regular list, first qual.40&12½@—
Second quality.....50&10&5@—

Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25%
Clark Coal, ℔ doz., $0.75.....20%

Hinges—
Blind and Shutter Hinges
Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	*1*	*3*	*5*
Doz. pair.....	*$0.75*	*1.35*	*2.70*

Mortise Shutter: (L. & P., O. S., Acme, &c.)

No.	*1*	*1½*	*2*	*2½*
Doz. pair....	*$0.70*	*.65*	*.60*	*.55*

Mortise Reversible Shutter (Buffalo, &c.):

No.	*1*	*1½*	*2*
Doz. pair.....	*$0.70*	*.65*	*.60*

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges 20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ℔ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightaville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire 65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	*1*	*2*	*3*
Hinges with L't'chs	*$2.00*	*2.70*	*5.00*
Hinges only.....	*1.25*	*1.90*	*3.50*
Latches only.....	*.70*	*.75*	*.35*

New England:
With Latch.....doz..@$2.00
Without Latch.....doz..@$1.60
Reversible Self-Closing:
With Latch.....doz..@$1.75
Without Latch...doz. ...@$1.35
Western:
With Latch.....doz. $1.75
Without Latch.....doz..$1.15
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ℔ doz. prs.....$1.00

Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing 40%
Lawson Mfg. Co. Matchless.....30%

Spring Hinges—
Holdback, Cast Iron...$6.75@$7.00
Non-Holdback, C'st Iron $6.50@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing 40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....℔ gro, $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American 30%
Columbia, ℔ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ℔ gr.$12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro, ...$12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Columbian Steel.....65&10%
Lawson Mfg. Co., Matchless...30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges 40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Chief Ball Bearings Floor Hinge 50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ℔ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓%
Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list February 10, 1908:
Light Strap Hinges..50&10%
Heavy Strap Hinges..60&5%
Light T Hinges.....50%
Heavy T Hinges.....40%
Extra Hvy. T Hinges.50&10%
Hinge Hasps.....33⅓%
Cor. Heavy Strap....60&5%
Cor. Ex. Heavy T...50&10%
Screw Hook and Strap. { *6 to 12 in...lb. 3½¢* / *1½ to 20 in...lb. 3½¢* / *22 to 36 in...lb. 3 ¢*
Extra 10&7½%
Screw Hook and Eye:
¾ to 1 inch.....lb. 6½¢
⅝-inch .....lb. 7½¢
½-inch .....lb. 8½¢

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

Hods— Coal—
M'f'gr's list, price per gross:

Inch	*15*	*16*	*17*	*18*
Galv. Open....	*$35*	*$39*	*$42*	*$46*
Jap. Open.....	*26*	*28*	*31*	*35*
Galv. Funnel...	*43*	*48*	*52*	*56*
Jap. Funnel....	*33*	*36*	*39*	*43*

10&7½&5%

Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

Hoes— Eye—
Scovil and Oval Pattern, 60&10@60&10&10%
Grub, list Feb. 23, 1899, 70&10@70&10&10%
D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern) 60%

Handled—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$2.50
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 40&5%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.40
B. B., 6½ in.....$3.50
Acme Wedding.....₱ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₱ doz. $5.25

Hoisting Apparatus—

See *Machines, Hoisting.*

Holders— Bit—

Angular, ₱ doz. $21.00.....45&10%

Door—

Bardsley's, Iron, 40%; Brass and Bronze.....25%
Empire.....50%
Pullman.....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip.....50%
Superior.....33⅓%

File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $18.00; ₱ doz.....$2.00

Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs.....$1.25
Dash Rein Holder, ₱ doz.....$1.25

Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....40%

Wire—

Belt, Nos. 1 to 15....75&10@80%
Wire C. & H. Hooks..80@80&10%
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80%; Ceiling..75&10@80%
Columbian Hdw. Co., Gem.....75&10%
Parker Wire Goods Co., King..70&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

Wrought Iron—

Box, 6 in., per doz., $0.90; 8 in., $1.15.
Cotton.....doz. $1.25@$1.50
Wrought Staples, Hooks, &c.—See Wrought Goods.

Miscellaneous—

Hooks, Bench, see Stops, Bench.
Rush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65
Grass, best, all sizes, per doz., $2.75@$3.00
Grass, common grades, all sizes, per doz.....$1.25@$1.50
Whiffletree.....lb. 5¾@6¢
Hooks and Eyes:
Brass.....60@60&10%
Malleable Iron.....70@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder.....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—

See *Nails, Horse.*

Horseshoes—

See *Shoes, Horses.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition.....ft. 6@6½¢
3-ply Guaranteed.....ft. 8½@9¢
4-ply Guaranteed.....ft. 9½@12¢
Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 8@ 9c
Fair Quality.....ft. 10@11¢

Irons— Sad—

From ¼ to 10.....lb. 2½@2¾¢
B. B. Sad Irons.....lb. 3¼@3½¢
Mrs. Potts', cents per set:

	Nos.			
	50	55	60	65
Jap'd Tops	83	80	93	91
Tin'd Tops	88	85	98	93

New England Pressing..lb. 3¾@4¢

Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner.....60%

Pinking—

Pinking Irons.....doz. 60@65¢

Irons, Soldering

See *Coppers.*

Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45%
Lockport.....30%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

Ladder—

Richards Mfg. Co., Ladder Jacks..50%

Jointers—

Pike Mfg. Co., Saw Jointers, $7.00..40%

Kettles—

Brass, Spun, Plain.....20@25%
Enameled and Cast Iron—See Ware, Hollow.

Knives—

Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co....60%

Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List.....80&10@—%
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's.....66⅔@70%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—

Serrated Edge, per doz. $5.00@5.50
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

Miscellaneous—

Farriers'.....doz. $2.60@3.50
Westenholm's.....₱ doz. $3.00@3.25

Knobs—

Base, 2½-inch, Birch or Maple, Rubber Tip.....gro. $1.25@1.40
Carriage, Jap., Drive, all sizes, gro. 35@40¢
Door, Mineral.....doz. 65@70¢
Door, Por. Jap'd.....doz. 70@75¢
Door, Por. Nickel..doz. $2.05@2.15
Bardsley's Wood Door, Shutters, &c. 15%

Lacing, Leather—

See *Belting, Leather*

Ladders, Store, &c.—

Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladles, Melting—

L. & G. Mfg. Co., Melting and Plumbers'.....25%
P., S. & W.....40&10%
Reading.....60%

Lanterns—Tubular—

Regular, No. 0.....doz. $4.35@4.50
Side Lift, No. 0.....doz. $4.60@4.75
Hinge Globe, No. 0. doz. $4.60@4.75
Other Styles.....40@40&10%

Bull's Eye Police—

3-inch.....$3.75@4.00

Latches— Thumb—

Roggin's Latches, Jap'd, with Screws.....doz. 35@40¢

Door—

Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50

Leaders, Cattle—

Small.....doz. 50¢; large, 60¢
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

Leathers, Pump—

See *Pumps—*

Lifters, Transom—

R. & E.....10%

Lines—

Wire Clothes, Nos.	*18*	*19*	*20*
100 feet	*$2.30*	*1.95*	*1.75*
75 feet	*$1.95*	*1.65*	*1.50*

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

Locks— Cabinet—

Cabinet Locks....33⅓@33⅓@5%

Door Locks, Latches, &c—

NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....40%
R. & E. Mfg. Co.....10%

Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

Sash, &c.—

Ives' Patent:
Bronze and Brass, 55&5%; Crescent, 60%; Iron, 60%; Window Ventilating, 40&20%; Robinson Pat. Ventilating Sash Lock 33⅓%.
Pul'man Patent Ventilating Lock..25%
Reading Sash Locks.....40%
Taylor Mfg. Co., Perfect Ventilating, ₱ doz.....$0.75@$1.00

Machines—Boring—

Com. Upr't, without Augers. $2.00@2.25
Com. Angl'r, without Augers, $2.25@2.50
Ford Auger Bit Co.....$22.00
Jennings', Nos. 1 and 4.....25&7½%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved.....40&10%

Corking—

Reisinger Invincible Hand Power... ₱ doz. $48.00

Fence—

Williams' Fence Machines....each, $5.50

Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Cyclone High Speed Chain Hoist.....25%

Ice Cutting—

Chandler's.....12½%

Washing

Boss Washing Machine Co.: Per doz.
Boss No. 1.....$57.00
Boss Rotary.....$21.00
Champion Rotary Banner No. 1.$57.00
Standard Champion No. 1.....$50.00
Standard Perfection.....$27.00
Cincinnati Square Western.....$33.00
Uneeda American, Round.....$33.60

Mallets—

Hickory.....45@5@50%
Lignumvitæ.....45@5@50%
Tinners' Hickory and Apple-wood.....doz. 45@5@50%

Mangers, Stable—

Swett Iron Works.....50%

Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50%

Mattocks—

See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—

Enterprise Mfg. Co.....20@25%
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....30&10%
Swift, Lane Bros. Co.....30%

Motors, Water—

Divine's Red Devil.....30%

$2.50	3.50	10.00	15.00	33⅓%
No. 1	2	3	4	

Lippincott's.....30%
Pike Mfg. Co., Tool and Knife Grinding.....33⅓%

Mowers, Lawn—

NOTE.—Net prices are generally quoted
Cheapest, 10-in., $2.00; advance 10¢ for each size.
Cheap, 10-in., $2.25; advance 15@20¢ for each size.
Better Grade, 10-in., $3.00; advance 25¢ for each size.

	12	*14*	*16*	*18-in.*
High Grade	*$4.50*	*4.75*	*5.00*	*5.25*

Continental.....60%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70%
Style C, High Wheel, spcl, list, 70&10%
Style D, High Wheel, spcl, list..70%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.40%
Horse.....40&5%
Pony.....40&5%
36-in. Horse.....30&10%
Eagle Horse.....30&5%
I. X. L. Horse.....50%

Nails—

Wire Nails and Brads, Miscellaneous.....85&5@85&10%
Cut and Wire. See Trade Report.
Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	.. ₱ lb. net, 12¢
Coleman	13	12	12	11	11	net ₱ lb
New Haven..	23	21	20	19	18	.. ₱ lb. net, 12¢
Livingston	19	18	17	16	16	.....10%
Western						₱ lb 8½¢

Jobbers' Special Brands. per lb. 9¢

Picture—

	1½	*2*	*2½*	*3 in.*
Brass Hd, gro.	*.45*	*.55*	*.60*	*.70*
Por. Head, gro.	*1.10*	*1.10*	*1.10*	

Upholsters—

Brass.....30%
Plated.....30&10%

Nippers—

See *Pliers and Nippers.*

Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples.....80%

Nuts— *Blank or Tapped.*

Cold Punched: *Off list*
Square.....5.40@5.50¢
Hexagon.....6.00@6.10¢
Square, C., T. & R..5.80@5.90¢
Hexagon, C., T. & R.6.60@6.70¢
Hot Pressed:
Square.....5.80¢
Hexagon.....6.30¢

Oakum—

Best.....lb. 6½¢
U. S. Navy.....lb. 6 ¢
Navy.....lb. 5 ¢
Plumbers' Spun Oakum..2¾@3 ¢

Oil—

Pike Mfg. Co., Stonoil.....40%

Oil Tanks—See *Tanks, Oil.*

Oilers—

Steel, Copper Plated.....75%
Chase or Paragon:
Brass and Copper.....50&10%
Zinc.....65&10%
Railroad.....60&10&10%
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers—Packing Box—

Herculever, ₱ doz., $24.....50%

Can Openers—

Per doz.
Sprague, Iron Handle....30@35¢
Sprague, Wood Handle.....40¢
Sardine Scissors.....$1.75@3.00
Can and Bottle Openers, ₱ doz., net: Yankee, $0.75@$0.85; Little Gem, $3.50@$0.65; Nifty.....$0.75

Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

Packing—

Asbestos Packing, Wick and Rope, any quantity.....18@20¢

Rubber—

(Fair quality goods.)
Sheet, C. I.....11@12¢
Sheet, C. O. S.....11@12¢
Sheet, C. B. S.....12@13¢
Sheet, Pure Gum.....40@45¢
Sheet, Red.....40@50¢
Jenkins' '96, ₱ lb, 80¢.....25%

Miscellaneous—

American Packing....lb. 7@10 ¢
Cotton Packing.....lb. 16@25 ¢
Italian Packing.....lb. 9@10¢
Jute.....lb. 4@4½¢
Russia Packing.....lb. 9@10¢

Pails, Water, Well, &c.—

See *Buckets.*

Paint—

Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size.....20%

Pans— Dripping—

Standard List..70&10@70&10&5%
Edwards, Royal Blue.....75%

Fry—

Common Lipped:

Nos.	*1*	*2*	*3*	*4*	*5*
Per doz.	*$0.75*	*0.85*	*0.95*	*1.15*	*1.30*

Refrigerator, Galva.—

Inch	*12*	*16*	*18*
Per doz.	*$1.75*	*2.25*	*2.80*	*3.15*

Paper—Building Paper

Asbestos: lb.
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft..2½¢
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.....3½¢
Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.....3¢
Per roll.
Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll, 48@58¢
Medium weight, 30 lbs. to roll. 56@70¢
Heavy weight, 40 lbs. to roll. 75@78¢
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton.....$54.50
Red Rope Roofing, 250 sq. ft. per roll.....$4.75

Tarred Paper—

1 ply (roll 400 sq. ft.), ton, $34.00@$38.00
2 ply, roll 108 sq. ft.....65¢
3 ply, roll 108 sq. ft.....88¢
Slater's Felt (roll 500 sq. ft.).80¢

Sand Paper and Cloth—

Flint and Emery.....50&10%
Garnet Paper and Cloth.....25%

Parers—Apple—

Goodell Co.:
Family Bay State.....₱ doz. $15.00
Improved Bay State.....₱ doz. $36.00
New Lightning.....₱ doz. $7.00
Turn Table '98.....₱ doz. $6.00
White Mountain.....₱ doz. $5.00
Ronanza Improved.....each $7.50
Dandy.....each $10.00
Eureka Improved.....each $20.00
New Century.....each $20.00
Ranger.....each $30.00
Livingston Nail Co.:
Daisy.....₱ doz. $4.00
Little Star.....₱ doz. $5.00
Rocking Table.....₱ doz. $6.20
Reading Hardware Co.:
Advance.....₱ doz. $4.00
Baldwin.....₱ doz. $4.00
Reading 72.....₱ doz. $3.25
Reading 78.....₱ doz. $6.25

Orange—

Goodell Co., Success.....each $20.00

Potato—

Saratoga.....₱ doz. $7.00
White Mountain.....₱ doz. $6.00

Picks and Mattocks—
(List Jan., 1908.)

1Ast .....70&10@70&10&10%
Cronk's Handled Garden Mattock, ℔ doz., $3.00.....33⅓%

Pinking Irons—
See *Irons, Pinking.*

Pins, Escutcheon—
Brass .....50@50&10%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—
Standard, 2-6 in.....70@—%
Extra Heavy, 2-6 in..75&10@—%
Fittings, Standard and Heavy, 80&10@80&10&10%

Pipe, Merchant—

	Consumers, Steel. Blk.	Consumers, Steel. Galv.	Carloads, Iron. Blk.	Carloads, Iron. Galv.
	%	%	%	%
⅛ and ¼ in.	66	50	64	..
⅜ in.	68	54	66	52
½ in.	70	58	68	56
¾ to 6 in.	74	64	72	62
7 to 12 in.	71	56	69	54

Pipe, Vitrified Sewer—
Carload lots.
Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:
First-class 87%
Second-class 90%

Pipe, Stove—

	Per 100 joints. C. L.	L. C. L.
Edwards' Nested:		
5 in., Standard Blue	$6.25	$7.25
6 in., Standard Blue	6.75	7.75
7 in., Standard Blue	7.75	8.75
5 in., Royal Blue	7.00	8.00
6 in., Royal Blue	7.50	8.50
7 in., Royal Blue	8.50	9.50
Wheeling Corrugating Co.'s Nested:		
5 in., Uniform Color	$6.15	$7.15
6 in., Uniform Color	6.65	7.65
7 in., Uniform Color	7.65	8.65

Planes and Plane Irons—
Wood Planes—
Bench, first qual.....30@30&10%
Bench, second qual...40@40&10%
Molding .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union 60%

Iron Planes
Chaplin's Iron Planes.....60%
Union 60%

Plane Irons—
Wood Bench Plane Irons, list Dec. 12, '06.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union 50%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—
Kohler's Eclipse.....℔ doz. $7.50

Plates—
Felloe .....lb. 3¾@4¢
Avery Stamping Co.:
Standard Wrot, Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1⅛-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

Steel Pipe Hook—
Never-Break .....75&10%

Pliers and Nippers
Button Pliers....75&5@75&10&5%
Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45 $1.50.

Gas Pipe..	7	8	10	12-in.
	$2.00	$2.25	$2.75	$3.50

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's 60%
No. 89 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers 40%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds....40%

Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10%
Machinists' Levels.....40@40&10%
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Dulex.....35%
Woods' Extension.....33⅓%

Points, Glaziers'—
Bulk and 1-lb. papers.....℔. 9 ¢
½-lb. papers.....lb. 9½¢
¼-lb. papers.....lb. 10 ¢

Police Goods—
Manufacturers' Lists...25@25&5%
Tower's 25%

Polish—Metal, Etc—
Ladd Co.:
Putzade Liquid, ℔ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ℔ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00...40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz, 50¢; ℔ gro, $4.50; ½ lb boxes, ℔ doz, $1.25; 1 lb boxes, ℔ doz, $2.25.
U. S. Liquid, 8 oz, cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

Stove—
Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon, ℔ gr. $5.75.....10%
Dixon's Plumbago.....℔ lb 8¢
Fireside .....℔ gr. $2.50
Gem, ℔ gr. $4.50.....10%
Japanese .....℔ gr. $3.50
Jet Black.....℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each .....75¢
Glasbright Powder, bbls., ℔ lb..20¢

Poppers, Corn—
1 qt. Square..doz.$0.80; gro.$8.75
1 qt. Round..doz.$0.90; gro.$10.00
1½ qt. Square.doz.$1.20; gro.$12.00
2 qt. Square..doz.$1.50; gro.$15.00

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—
See *Parers, Potato.*

Pots, Glue—
Enameled 40%
Tinned .....50&10%

Powder—
In Canisters:
Duck, 1 lb.....each 45¢
Fine Sporting, 1 lb....each 75¢
Rifle, ½-lb. .....each 45¢
Rifle, 1 lb.....each 25¢
In Kegs:
12½-lb. kegs.....$3.50
25-lb. kegs.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

King's Smokeless:	Shot Gun,	Rifle,
Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)	14.00	17.00
Half case 12 (1 lb c. bk)	7.25	8.75

Presses—
Fruit, Wine and Jelly—
Enterprise Mfg. Co.....20@25%

Seal Presses—
Morrill's No. 1, ℔ doz., $20.00.....50%

Pruning Hooks and Shears
See *Shears.*

Pullers, Nail, Etc.—
Cyclops 50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant 50%
Staple Pullers, Utica and Davison 60%
Taylor Mfg. Co., Sampson Tack, ℔ doz.....$0.40

Pulleys, Single Wheel—

Inch	*1½*	*1¾*	*2*	*3*
Awning or Tackle, doz.	*$0.30*	*.45*	*.60*	*1.05*
Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55				
Inch	2	2¼	2½	
Hot House, doz...	*$0.65*	*.85*	*1.20*	
Inch	*1¼*	*1½*	*1¾*	*2*
Screw, doz....	*$0.16*	*.19*	*.23*	*.30*
Inch	*1¾*	*2*	*2¼*	*2½*
Side, doz.....	*$0.25*	*.40*	*.55*	*.60*
Inch	*1½*	*1¾*	*2*	*2½*

Sash Pulleys—
Common Frame; Square or Round End, per doz., 1¾ and 2 in.....17@20¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in....20@21¢
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4.....19¢
Common Sense.....℔ doz. 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. .....20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

Pumps—
Cistern 60%
Pitcher Spout.....75&5@75&10%
Wood Pumps, Tubing, &c....50%
Barnes Dbl. Acting (low list).....45%
Barnes Pitcher Spout.....80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list).....50&5%
Flint & Walling's Mail (low list) .....50&5%
Flint & Walling's Tight Top Pitcher 80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $8.50.....30%
Myers' Pumps (low list).....
Myers' Power Pumps..... } 50%
Myers' Spray Pumps.....

Pump Leathers—
Plunger and Valve Leathers—Per gro.:

No.....	*1*	*2*	*3*	*4*
	$5.00	*6.00*	*7.00*	*8.00*

Cup Leathers—Per 100:

Inch....	*2½*	*3*	*3½*	*4*
	$5.00	*7.00*	*9.00*	*12.00*

} 40%

Punches—
Saddlers' or Drive, good, doz.50@75¢
Spring, single tube, good quality $1.75
Revolving (4 tubes)....doz.$3.50
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44.....40&10%

Rail—Barn Door, &c.—
Sliding Door, Painted Iron, 2½@2¾¢
Sliding Door, Wrought Brass. 1¼ in., lb., 36¢.....30%
Cronk's:
Double Braced Steel Rail..℔ ft. 2¾¢
O. N. T. Rail.....2¾¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft.....$3.45
O. N. T., ℔ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $1.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢ 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¾ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

Rakes—
NOTE.—Many goods are sold at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.75
Cronk's:
Steel Garden: Champion, ℔ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ℔ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, ℔ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Jumbo Lawn, 26-tooth....℔ doz. $5.00
Lawn Queen, 20-tooth....℔ doz, $2.85
Lawn Queen, 24-tooth....℔ doz. $3.00
Paragon, 20-tooth.....℔ doz. $2.65
Paragon, 24-tooth.....℔ doz. $2.75
Steel Garden, 14-tooth....℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

Rasps, Horse—
Disston's 75%
Heller Bros.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

Razors—
John Engstrom Swedish.....65%
Sharp Shaver.....60%
Fox Razors, ℔ doz., No. 42, $24.00; No. 44, $20.00; No. 82, Platina, $36.00. } 12½% 50%

Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P, 33¼%; 2904 PN, 33¼%; 0924 N, 33¼%; 02081 N, 33¼%; 002904 PN, 33¼%; 802 N, 33¼%; 986 PN, 2904 N, 974 PN.....25%
5009 PN 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....30%
304 P 304 PN, 00304 P, 00304 PN.33¼%

Registers—*List July 1, 1903.*
Japanned, Electroplated and Bronzed 70%
White Porcelain Enamel..50&10%
Solid Brass or Bronze Metal..40%

Revolvers—
Single Action.....$?¢@$1.00
Double Action, except 44 cal..$2.00
Double Action, 44 caliber...$2.00
Automatic $4.00
Hammerless $4.50

Riddles, Hardware Grade
16 in.....per doz.$2.50@$2.75
17 in.....per doz.$2.75@$3.00
18 in.....per doz.$3.00@$3.25

Rings and Ringers—
Bull Rings—

	2	2½	3 inch.
Steel	*$0.70*	*0.75*	*0.80 doz.*
Copper	*$1.10*	*1.25*	*1.65 doz.*

Hog Rings and Ringers—
Hill's Rings, gro. boxes.$4.50@$4.50
Hill's Ringers, Gray Iron, doz., 60@75¢
Hill's Ringers, Malleable Iron, doz.80@95¢
Blair's Rings..per gro.$5.00@$5.50
Blair's Ringers...per doz.75@90¢

Rivets and Burrs—
Copper .....50@50&10%
Carriage, Coopers', Tinners', &c.: Black .....70&10%
Metallic Tinned.....70%

Bifurcated and Tubular—
Assorted in Boxes.
Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.
Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.

Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

Rope—
Manila, 7-16 in. diam. and larger: Pure .....lb. 9½¢
Sisal, 7-16 in. diam. and larger: Pure .....lb. 7¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Pure .....lb. 7½@7¾¢
Sisal, Tarred, Medium Lath Yarn: Pure .....lb. 6½@6¾¢
Cotton Rope: Best, ¼-in. and larger...18@20¢
Medium, ¼-in. and larger.16@17¢
Common, ¼-in. and larger..10¢
In coils, ½¢ advance.
Jute Rope: Thread, No. 1, ¼-in. and up, lb. .....6¼¢
Thread, No. 2, ¼-in. and up, lb. .....5¾¢

Wire Rope—
Galvanized .....37½&2½%
Plain .....45&2½%

Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

Rules
Boxwood .....60@60&10%
Ivory .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood 60%
Flexifold 40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....5%&10%
Lufkin's Lumber.....50&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins':
Circular 45%
Band ..... 50@50&10%
Butcher Saws 50%
Cross Cuts 35%
One-Man Cross Cut 40%
Narrow Cross Cut 50%
Hand, Rip and Panel ..... 35&5%
Miter Box and Compass 40%
Mulay, Mill and Drag 45%
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames ..... 30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth 50%
Band, 2 to 18 in. wide 60%
Band, ¼ to 1¾ 60%
Crosscuts 45%
Narrow Crosscuts 50%
Mulay, Mill and Drag 50%
Framed Woodsaws 25%
Woodsaw Blades 25%
Woodsaw Rods, Tinned 15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination 30%
Compass, Key Hole, &c. 25%
Butcher Saws and Blades 30%
C. E. Jennings & Co.'s:
Back Saws 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws 30%
Simonds':
Circular Saws 45%
Crescent Ground Cross Cut Saws 30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws 45%
Band Saws 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand 45%
Compass, Key Hole, &c. ..... 25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws 50%

Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A 25%
Disston's:
Concave Blades 35%
Keystone Blades 35%
Hack Saw Frames 30%
Simonds, 25%; The Best, 35%;
Culley 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 ..... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades ..... 40&10%
Griffin's Hack Saw Frames ..... 35&5&10%
Griffin's Hack Saw Blades ..... 35&5&10%
Star Hack Saws and Blades ..... 15&10%
Sterling Hack Saw Blades ..... 30&10&5%
Sterling Hack Saw Frames ..... 30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 ..... 10%
Victor Hack Saw Blades 20%
Victor Hack Saw Frames 40%
Whitaker Mfg. Co.:
National Hand Blades 40%
National Hand Frames ..... 30&5%
National Power Blades ..... 30&10%

Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Laster, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 .. 15&10%

Scales—

Union Platform, Plain ..... $2.10@2.20
Union Platform, Stpd ..... $2.20@2.30
Chatillon's:
Eureka 35%
Favorite 40%
Grocers' Trip Scales 50%
The Standard Portables 40%
The Standard R. R. and Wagon ..... 50&10%

Scrapers—

Box, 1 Handle ..... doz. $1.85@2.10
Box, 2 Handle ..... doz. $2.35@2.50
Ship ... Light, $2.00; Heavy, $4.50
Chapin-Stephens Co., Box .. 30@30&10%
Richards Mfg. Co., Foot 60%

Screws—Bench and Hand

Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $3.00@3.25; 1¼ $3.50@3.75
Bench, Wood ..... 20@20&10%
Hand, Wood ..... 70&10@70&10&10%
Chapin-Stephens Co., Hand ..... 70@70&10&2½%

Coach, Lag and Hand Rail—

Lag, Cone Point ... 80&5@80&10%
Coach, Gimlet Point .. 80@80&5%
Hand Rail ..... 70&10@75%

Jack Screws—

Standard List ..... 70&10@75%
Millers Falls ..... 50&10&10%
Swett Iron Works ..... 70@75%

Machine—

Cut Tread, Iron, Brass or Bronze:
Flat Head or Round Head, 80@80&10%
Fillister Head ..... 40@40&10%
Rolled Thread, F. H. or R. H., Iron ..... 75&10%
F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%

Set and Cap—

Set (Iron) ..... 75&10&7½%
Set (Steel), net advance over Iron 25%
Sq. Hd. Cap ..... 70&10&7½%
Hex. Hd. Cap ..... 70&10&7½%
Rd. Hd. Cap ..... 50&7½%
Fillister Hd. Cap ..... 60&7½%

Wood—

List July 23, 1903.
Flat Head, Iron ..... 87½&5@.. %
Round Head, Iron ..... 85&5@.. %
Flat Head, Brass ..... 80&5@.. %
Round Head, Brass .. 77½&5@.. %
Flat Head, Bronze ..... 75&5@.. %
Round Head, Bronze .. 72½&5@.. %
Drive Screws ..... 87½&5@.. %

Scroll Saws—

See *Saws, Scroll.*

Scythes— *Per doz.*

Grass, No. 1, Plain $7.00
Clipper, Bronzed Webb $7.25
No. 3 Clipper, Pol'd Webb ... $7.50
No. 6 Clipper and Solid Steel. $7.75
Bush, Weed and Bramble, Nos. 11, 12 and 13 ..... $7.25
Grain, No. 1 ..... $9.00@9.50
Bronzed Webb, No. 1 ... $9.25@9.75
Nos. 3 and 4 Clipper, Grain, $9.50@10.00
Solid Steel, No. 6 .... $10.00@10.50

Seeders, Raisin—

Enterprise ..... 25@30%

Sets— Awl and Tool—

Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz. sets $9.00

Sets, Nail—

Octagon ..... gro. $3.50@3.75
Buck Bros. 27½%
Mayhew's ..... ℔ gro. $9.00
Snell's Corrugated, Cup Pt. ... 40&10%
Snell's Knurled, Cup Pt. ... 40&10%
Victor Knurled, Cup Pt. ... ℔ gro. $7.50

Rivet—

Regular list ..... 75@75&10%

Saw—

Atkin's:
Criterion 40%
Adjustable 40%
Disston's Star, Monarch and Triumph 30%
Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut $20.60
No. 5, Mill $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style $10.00
Special $16.25
Giant Royal Cross Cut ..... ℔ doz. $7.50
Royal, Hand ..... ℔ doz. $4.50
Taintor Positive ..... ℔ doz. $6.75

Shaving—

Fox Shaving Sets, No. 39 ..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s 75%

Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz. $1.50
Mounted Kitchen Sand Stone, ℔ doz. $1.50
Natural Grit Carving Knife Hones, ℔ doz. $3.00
Quick Cut Emery Carving Knife Hones, ℔ doz. $1.50
Quick Edge Pocket Knife Hones, ℔ doz. $2.50
(50%)

Skate—

Smith & Hemenway Co., Eureka .. 50%

Shaves, Spoke—

Iron ..... doz. $1.25
Wood ..... doz. $2.00
Bailey's (Stanley R. & L. Co.) 45%
Chapin-Stephens Co. ..... 30@30&10%
Goodell's, ℔ doz. $9.00 ..... 15&10%

Shears—

Cast Iron	7	8	9 in.
Best	$16.00	18.00	20.00 gro.
Good	$13.00	15.00	17.00 gro.
Cheap	$5.00	6.00	7.00 gro.

Straight Trimmers, &c.:
Best quality Jap .... 70@70&10%
Best quality Nickel .. 60@60&10%
Tailors' Shears ..... 40@40&10%
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears 10%
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list ..... 30&10&5%
Grass ..... 50&10%
Horse or Mule ..... 50&10%
J. Wiss & Sons Co.:
Best Quality Jap'd ..... 60&10%
Best Quality Nickeled ..... 50&10%
Tailors' 25%

Tinners' Snips—

Steel Blades ..... 20&5@20&10%
Steel Laid Blades ..... 40&10@50%
Acme Cast Snips ..... 40@45&5%
Forged Handles, Steel Blades, Berlin 50%
Heinisch's Snips 40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%
National Cutlery Co.'s Forged Steel. 50%
Niagara Snips 40%
P. S. & W. Forged Handles, 25%; W. R. W. 50%
J. Wiss & Sons Co.:
Wiss Forged Steel 25%

Pruning Shears—

Cronk's Hand Shears 33⅓%
Cronk's Wood Handle Shears 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%
J. T. Henry Mfg. Co.:
Pruning Shears, all grades 40%
P. S. & W. Co. ..... 40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand, 60&10%

Sheaves—Sliding Door—

Reading 40%
R. & E. list 15%

Sliding Shutter—

Reading list 40%
R. & E. list 15%

Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 60&5%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
Union, League, 10 and 12 gauge, Rival Grade 25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge 20%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

Shells, Loaded—

Loaded with Black Powder .. 40%
Loaded with Smokeless Powder, medium grade ..... 40&5%
Loaded with Smokeless Powder, high grade ..... 40&10&10%
Union Metallic Cartridge Co.:
New Club, Black Powders 40%
Nitro Club, Smokeless Powders. 40&5%
Arrow, Smokeless Powders, 40&10&10%
Winchester:
Smokeless Repeater Grade ..... 40&5%
Smokeless Leader Grade ... 40&10&10%
Black Powder 40%

Shingles, Metal— Per Sq.

Edwards Mfg. Co.:

	Painted.	Galv.
14 x 20	$4.25	$6.00
10 x 14	4.50	6.25
7 x 10	4.75	6.50

Wheeling Corrugating Co.:

Dixie, 14 x 20 in.	$4.25	$5.50
Dixie, 10 x 14 in.	4.50	6.00
Dixie, 7 x 10 in.	5.00	6.75

Shoes, Horse, Mule, &c.—

F.o.b. Pittsburgh:
Iron ..... per keg. $4.10
Steel ..... per keg. $3.85
Burden's, all sizes ..... ℔ keg $3.90

Shot—

25-lb. bag.
Drop, up to B $1.75
Drop, B and larger 2.00
Buck 2.00
Chilled 2.00
Dust 2.30

Shovels and Spades—

Association List, Nov. 15, 1902. 40%
Avery Stamping Co. 40%

Snow Shovels—

Long Handle ..... $3.25@$3.50
Wood and Mall, D Handle, $3.75@$4.00

Sieves and Sifters—

Hunter's Imitation, gro $9.50
Hunter's Genuine, per gro .. $12.00

Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz. $39.00

Sieves, Seamless Metallic

	Per dozen.			
Mesh	1½	16	18	20
Iron Wire	$1.05	1.05	1.10	1.20
Tinned Wire	$1.15	1.15	1.20	1.30

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested .... doz. $0.90@0.95
Mesh 20, Nested .... doz. $1.00@1.05
Mesh 24, Nested .... doz. $1.30@1.40

Sinks, Cast Iron—

Painted, Standard list:
12 x 12 to 22 x 36 in 60%
20 x 24 to 24 x 50 in 50%
24 x 60 to 24 x 120 in 30%
Barnes' low list 60%

NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—

Cast Iron ..... 70@75&10%
Steel ..... 40@45%

Slates, School—

Factory Shipments.
"D" Slates ..... 50@50&10%
Eureka, Unexcelled Noiseless .. 60&7 tens.
Victor A, Noiseless .60&5 tens 45%

Slaw Cutters—See *Cutlers.*

Snaps, Harness—

German ..... 40@40&10%
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%
High Grade, 40%; Trojan 40%
Jockey 25%

Snaths—

Scythe 60%

Snips, Tinners—See *Shears.*

Spoons and Forks—

Silver Plated—

Good Quality ..... 50&10@60&5%
Cheap ..... 60@60&10%
International Silver Co:
1847 Rogers Bros. ..... 10&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand 60%
Wm. Rogers & Son ..... 60&10%

Miscellaneous

German Silver ..... 60@60&5%

Tinned Iron—

Teas ..... per gro. 50@55¢
Tables ..... per gro. $0.90@$1.00

Springs— Door—

Bardsley's Spring and Check 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) 20%
Pullman Door and Gate 10%
Reliance (Coil) ..... 40&10%
Star (Coil) 35%
Torrey's Rod, 39 in. ... ℔ doz. $1.00

Carriage, Wagon, &c.—

1¼ in. and Wider:	*Per 100 lb.*
Black	*$4.75@$5.00*
Half Bright	*$4.75@$5.00*
Bright	*$5.25@$5.50*

Painted Seat Springs:
1½ x 2 x 26 .... per pair. 45@47¢
1½ x 3 x 28 .... per pair. 68@71¢

Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ℔ doz. $12.00
Enterprise ..... 25&30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

Squares—

Nickel plated .. } *List Jan. 5, 1900.*
Steel and Iron .. } *80@80&5%*
Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%
Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%
Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel 15%

Squeezers, Lemon

Wood, Porcelain Lined:
Cheap ..... doz. $1.00
Good Grade ..... doz. $1.25
Tinned Iron ..... doz. $0.75@1.00
Iron, Porcelain Lined ... doz. $1.75
Victor, ℔ gro. $9.00

Staples—

Barbed Blind ..... 85&5@85&10%
Electricians' ..... 80&10&10@85%
Fence Staples, Polished, $2.05; Galvanized $2.35
Poultry Netting Staples ..... per lb. 3¼@3½¢

Steels, Butchers'—

Dick's 30%
Foster Bros. 30%

Steelyards— .... 30@30&10%

Stocks and Dies—

Blacksmiths' ..... 50@50&10%
Curtis Rev'ble Ratchet Die Stock .. 25%
Derby Screw Plates 25%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plate 25%

Stoners, Cherry—

Enterprise ..... 25@30%

Stones, Axe—

Pike Mfg. Co., Axe Stones (all kinds) 33⅓%

Glass Cutters' Stones—

Pike Mfg. Co., Glass Cutters' Stones and Supplies 40%

Stones, Oil, &c.—

	℔
Pike Mfg. Co., 1907 list:	
Arkansas St., No. 1, 3 to 5¼ in.	$2.80
Arkansas St., No. 1, 5½ to 8 in.	$3.50
Arkansas Slips No. 1	$4.00
Lily White Washita, 4 to 8 in.	60¢
Rosy Red Washita, 4 to 8 in.	60¢
Washita St., Extra, 4 to 8 in.	50¢
Washita St., No. 1, 4 to 8 in.	40¢
Washita St., No. 2, 4 to 8 in.	25¢
Lily White Slips	90¢
Rosy Red Slips	90¢
Washita Slips, Extra	80¢
Washita Slips, No. 1	70¢
Washita Slips, No. 2	40¢
India Oil Stones (entire list)	33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit	40%
Quickcut Emery and Corundum Axe Stone, Double Grit	33⅓%
Quickcut Emery Rubbing Bricks	40%
Hindostan No. 1, R'g'lar.	8¢
Hindostan No. 1, Small	10¢
Turkey Oil Stones, Extra, 5 to 8 in.	80¢
Queer Creek Stones, 4 to 8 in.	20¢
Queer Creek Slips	40¢
Sand Stone	6¢

(33⅓%; 33⅓&7½%)

Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.50
Green Mountain S. S. ℔ gro. $7.00
Extra Indian Pond S. S. ℔ gro. $8.00
No. 1 Indian Pond S. S. ℔ gro. $7.50
No. 2 Indian Pond S. S. ℔ gro. $5.00
Leader Red End S. S. ℔ gro. $5.00
Quick Cut Emery... ℔ gro. $10.00
Pure Corundum..... ℔ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1904 list 33⅓%
Electro (Artificial), ℔ gro., $12.00 ..... 33⅓%
Lightning (Artificial), ℔ gro., $18.00 ..... 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers..... ℔ gro. $9.00

Stops— Bench—

Millers Falls..... 15&10%
Morrill's, ℔ doz., No. 1, $10.00.... 50%
Morrill's, No. 2, $12.50..... 50%

Door—

Chapin-Stephens Co..... 50@50&10%

Plane—

Chapin-Stevens Co..... 20%

Straps— Box—

Acme Embossed, case lots.. 20&10&10%
Cary's Universal, case lots... 20&10&10%

Stretchers, Carpet—

Cast Iron, Steel Points..doz. 55¢
All Steel Socket...doz. $2.00@$2.25
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00.... 20%

Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%
P., S. & W. Co..... 40&10&5%

Sweepers, Carpet—

Per doz.—
Bissell Carpet Sweeper Co.:
Cyco Bearing Superba, $36.00; Triumph, $33.00; Parlor Queen, $30.00; Elite, $29.00; Boudoir, $27.00; American Queen, $27.00; Ideal, $25.00; Gold Medal, $24.00; Primier, $24.00; Prize, $24.00; Welcome, $24.00; Grand Rapids, Nickel, $24.00; Japan, $22.00; Crystal, $36.00; Grand, $36.00; Parlor Grand, $48.00; Club, $54.00; Hall, $60.00; Standard Nickel, $22.00; Standard Japan, $20.00; Crown Jewel, Nickel, $21.00; Crown Jewel, Japan, $19.00; Junior, Nickel, $22.00; Junior, Japan, $20.00.

NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten dozen lots.

Tacks, Finishing Nails, &c.

American Carpet Tacks...90&40%
American Cut Tacks.....90&40%
Swedes' Cut Tacks.....90&40%
Swedes' Upholsterers'....90&50%
Gimp Tacks.....90&50%
Lace Tacks.....90&50%
Trimmers' Tacks.....90&40%
Looking Glass Tacks.....65%
Bill Posters' and Railroad Tacks, 90&50&10%
Hungarian Nails.....80&20%
Finishing Nails.....70%
Trunk and Coat Nails...80&10%

NOTE.—The above prices are for Straight Weights.

Miscellaneous—

Double Pointed Tacks, 90&6 tens@—%

Se also Nails, Wire.

Tanks, Oil and Gasoline—

Wilson & Friend Co.:

Gal.	Gasoline	Oil
30	$2.75	$3.00
60	$3.50	$4.00
110	$5.00	$5.75

Tapes, Measuring—

American Asses' Skin....50@—%
Patent Leather.....25@30&5%
Steel .....33⅓&5%
Chesterman's .....25@25&5%
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin.....40&10@50%
Metallic .....30@30&5%
Patent Bend, Leather...25&5@25&10%
Pocket .....40@40&5%
Steel .....33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 3ML, etc. 25%
Chesterman's Steel, No. 1038L, etc. 35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lb.....$2.55@$2.80

Thermometers—

Tin Case, Cabinet, Flange, Dairy, &c.....30@35%

Ties, Bale—Steel Wire—

Single Loop.....82½&10%
Monitor, Cross Head, &c. 70&2½%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White.....20@20&5%

Haying—

Myers' Hay Tools..... 50%

Ice Tools—

Gifford-Wood Co..... 15%

Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated..... $2.00

Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved..... 33⅓%
Simonds' Crescent..... 30%

Ship—

L. & I. J. White..... 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz., $1.15@$1.25; gro.... $11.50@12.00
Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50

Game—

Imitation Oneida.....75@10%
Newhouse ..... 50&5%
Hawley & Norton..... 65&10%
Victor ..... 75@75&10%
Oneida Community Jump..... 70&5%
Stop Thief..... 60%
Tree Trap..... 60%
Hector ..... 75@75&10%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes, 12¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine), ℔ doz.:

	Crate lots.	Small lots.
No. 1, Rat.....	$11.50	$14.50
No. 3, Rat.....	$5.75	$6.50
No. 3½, Rat.....	$4.70	$5.25
No. 5, Mouse.....	$2.25	$3.00

Animal Trap Co.:
Out o' Sight, Mouse, ℔ doz.....$0.66
Out o' Sight, Rat, ℔ doz..... 1.20
Easy Set, Mouse, ℔ doz..... .33
Easy Set, Rat, ℔ doz..... .85
Out o' Sight Chockers, ℔ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ℔ doz, traps ..... .75

Trowels—

Disston Brick and Pointing..... 25%
Disston Plastering..... 20%
Disston "Standard Brand" and Garden Trowels..... 30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Forged Steel Garden Trowels, in bulk, net ℔ gro. $5.50
In 1 doz. boxes..... ℔ gro. $6.00
Woodrough & McFarlin, Plastering. 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern..... 50&10%
Western Pattern..... 60&10%
Handy Trucks..... ℔ doz. $16.00
Grocery ..... ℔ doz $15.00
McKinney Trucks..... each, net $10.00
Model Stove Trucks..... ℔ doz $18.50

Tubs, Wash—

M'f'gr's list, price per gross.
No. 0 1 2 3
Galvanized. $67 $79 $89 $99 10&7½ &5&5%

Twine, Miscellaneous—

Flax Twine:
No. 9, ¼ and ½-lb. Balls. 21@23¢
No. 12, ¼ and ½-lb. Balls. 19@21¢
No. 18, ¼ and ½-lb. Balls. 16@18¢
No. 24, ¼ and ½ -lb. Balls. 15½@17½¢
No. 36, ¼ and ½-lb. Balls. 15@17¢
Chalk Line, Cotton ¼-lb. Balls .....24@29¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz.....8½@19¢
Cotton Wrapping, 5 Balls to lb., according to quality..13½@19¢
American 2-Ply Hemp, ¼ and ½-lb. Balls.....12½@15¢
American 3-Ply Hemp ¼-lb. Balls .....13½@16¢
India 2-Ply Hemp, ¼ and ¼-lb. Balls (Spring Twine)...7½@9¢
India 3-Ply Hemp, 1-lb. Balls 7¼@9¢
India 2-Ply Hemp, 1½-lb. Balls, 7@8½¢
2, 3, 4 and 5-Ply Jute, 1¼-lb. Balls .....9@11¢
Mason Line, Linen, ½-lb. Bls.47¢
No. 264 Mattress, ¼ and ½ lb. Balls, according to quality, 30@60¢
Wool, 3 to 6 ply....B 6¢; A 7½¢

Vises—

Solid Box.....50&5@50&10&5%

Parallel—

Athol Machine Co.:
Simpson's Adjustable..... 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co., Slide ..... 40&5%; 65%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' 40%
Star, Solid Jaw, Machinists'..... 50%
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co.:
Adjustable Jaw..... 30%
Monarch, 50%; Solid Jaw..... 50%
Massey Vise Co.:
Clincher 40%
Parallel Bar..... 15%
Perfect, 16⅔; Lightning Grip..... 15%
Merrill's 25%
Millers Falls Oval Slide Pattern. 60&10%
Parker's:
Victor, 20@25%; Regulars....20@25%
Vulcan's ..... 40@45%
Combination Pipe..... 55@60%
Prentiss ..... 20@25%
Rock Island..... 25%
Snediker's X. L..... 33⅓%
Stephens' 33⅓%

Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps..... 30%
Perfection Saw Clamps, ℔ doz....$4.50
Reading 60%

Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's 40%
Star Solid Jaw Woodworkers'....60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe..... 70%
Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe..... 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe..... 25%

Wads—*Price per M.*

B. E., 11 up..... .60¢
B. E., 9 and 10..... .70¢
B. E., 8..... .80¢
B. E., 7..... .80¢
P. E., 11 up..... $1.00
P. E., 9 and 10..... 1.25
P. E., 8..... 1.50
P. E., 7..... 1.50
Ely's B. E., 11 and larger. $1.70@1.75
Ely's P. E., 12 to 20....$3.00@3.25

Dis. 15%

Ware, Hollow—

Cast Iron, Hollow—
Stove Hollow Ware:
Enameled .....45&10%
Ground .....50&5%
Plain or Unground.....60%
Country Hollow Ware, per 100 lbs .....$2.75@$3.00
White Enameled Ware:
Maslin Kettles.....65&10%
Covered Wares:
Tinned and Turned.....35&10%
Enameled .....45&10%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware..... 33⅓%
El-an-ge ..... 60&10%
Iron Clad Ware..... 70&10%
Lava and Volcanic, Enameled..40&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch	6	7	8	9
Each	45¢	50¢	55¢	65¢

Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles ..... 65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd..... 60%
Steel Stew Pans, Stew Pots, etc.
Porcelained 50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles ..... 65&5%
Solid Steel Kettles..... 60&5%

Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

Washboards—

Solid Zinc: ℔ doz.
Crescent, family size, bent frame.$4.05
Red Star, family size, stationary protector $4.05
Double Zinc Surface:
Saginaw Globe, family size, stationary protector..... $3.55
Cable Cross, family size, stationary protector..... $3.60
Single Zinc Surface:
Naiad, family size, open back, perforated $3.00
Single Saginaw Globe..... $2.85
Brass Surface:
Brass King, Single Surface, open back $4.05
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.60
Glass Surface:
Glass King, Single Surface, open back $3.95
Enamel Surface:
Enamel King, Single Surface, ventilated back..... $3.95

Washers—Leather, Axle—

Solid .....90@90&10%
Patent .....90@90&5%
Coil: ⅞ 1 1¼ 1¼ inch. 9¢ 10¢ 11¢ 14¢ per box.

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers....$4.65 3.75 2.45 2.25 2.05

The above prices are based on $6.75 off list.

In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ℔ 100 lb. disct.; in 100 lb kegs, add 10¢ net ℔ 100 lb; in 5 or 10 lb boxes, add 50¢ net ℔ 100 lb; in 1 lb boxes, add $1.00 net ℔ 100 lb.

Cast Washers—

Over ½-inch, barrel lots, per lb. 1½@1¾¢

Wedges—

Oil Finish.....lb., 2¼@2¾¢

Weights—Hitching—

Covert Mfg. Co..... 30&2%

Sash—

Per net ton, f.o.b. factory:
Eastern District.....$21.00@—
Western and Central Districts .....$20.00@$22.00

Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery 75%

Well—

8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.

Wire and Wire Goods—

Bright and Annealed:
6 to 9.....72½&10&7½%
10 to 18.....72½&10&10%
19 to 26.....75&10&10&2½%
27 to 36.....77½&7½%
Galvanized:
6 to 9.....72½&10%
10 to 14.....72½&10&5%
15 to 16.....72½&10&5%
17 to 18.....72½%
19 to 26.....70&5&2½%
27 to 36.....65&10&10%
Coppered:
6 to 9.....65&10&10%
10 to 14.....70&10&5%
15 to 18.....65&10&10&10%
19 to 26.....70&5&2½%
27 to 36.....72½&10&2½%
Tinned:
6 to 18.....67&10&10%
Brass .....15½¢ lb., base
Copper .....15¼¢ lb., base
Cast Steel Wire..... 50%

Spooled Wire—

Annealed and Tinned..... 75%
Brass and Copper..... 70%
Retailers' Assortments, per box. $2.00@$2.25

Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Steel Wire Goods.....90&40%
Brass Wire Goods.....90&40%
Brass Cup and Shoulder Hooks, 35&10%

Wire Cloth and Netting—

Galvanized Poultry Netting, 80&2½@80&7½%
Painted Screen Cloth, 100 ft., $1.35
Standard Galv. Hardware Grade: 100 ft. rolls, 2½ to 48 in. wide, Per 100 sq. ft.
Nos. 2, 2½ and 3 Mesh....$2.75
Nos. 4 and 5 Mesh.....$3.00
No. 6 Mesh.....$3.25
Nos. 7 and 8 Mesh.....$3.75

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural .....80&10&10%
Alligator or Crocodile..70&10@75%
Baxter Pattern S Wrenches, 70&5@70&10%
Drop Forged S.....45@45&5%
Acme ..... 60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%. ..... 50&5%
Steel Handle Nut..... 50&5%
Combination Black..... 50&5%
Merrick Pattern..... 50&5%
Boardman's 40%
Coes' Genuine Knife Hdl...40&10&5&5%
Coes' Genuine Steel Hdl...40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"...40&10&10&5&5%
Donohue's Engineer..... 40&10%
Eagle 70%
Gem Pocket..... 30%
Hercules 70%
W. & B. Machinist:
Case lots..... 50&10%
Less than case lots..... 50%
W. & B. Railroad Special:
Case lots..... 50%
Less than case lots..... 40&10&5%
Solid Handles, P., S. & W..50&10%; full cases..... 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain..... 50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.... 40&10&5%
Other Wrenches..... 50%
Vulcan and Agrippa Chain..... 50%
Whitaker Machinists':
Case Lots..... 50&10%
Less than case lots..... 50%

Fruit Jar—

Benj. P. Forbes, Triumph, ℔ gro., $7.50; per doz..... $0.90

Wrought Goods—

Staples, Hooks, &c., list March 17, '02.....90@—%

Zinc— (*Cask lots at mill.*)

Sheet.....per 100 lb., $7.00

CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from store—

Refined Iron:

1 to 1⅞ in. round and square; 1½ to 4 in. x ⅜ to 1 in.	₩ ℔ 1.80¢
1½ to 4 in. x ¼ to 5-16	₩ ℔ 2.00¢
Rods—⅜ and 11-16 round and square	₩ ℔ 2.00¢

Angles: Cts ₩ ℔

3 in. x ¼ in. and larger	2.25¢
3 in. x 5-16 in. and ⅛ in.	2.30¢
1½ to 2½ in. x ⅛ in.	2.10¢
1½ to 2¾ in. x 3-16 in. and thicker	2.05¢
1 to 1¼ in. x 3-16 in.	2.10¢
1 to 1¼ x ⅛ in.	2.15¢
⅞ x ⅛ in.	2.30¢
⅝ x ⅛ in.	2.40¢
½ x ⅛ in.	3.45¢
⅞ x 1-32 in.	3.95¢

Tees:

1 in.	2.40¢
1¼ in.	2.20¢
1½ to 2½ in.	2.10¢
3 in. and larger	2.35¢
Beams	2.25¢
Channels, 3 in. and larger	2.25¢
Bands—1½ to 6 x 3-16 to No. 8	2.25¢
"Burden's Best" Iron, base price	3.15¢
Burden's "H. B. & S." Iron, base price	2.95¢
"Ulster"	3.20¢
Norway Bars	3.30¢

Merchant Steel from Store—

	per ℔
Bessemer Machinery	1.90¢
Toe Calk, Tire and Sleigh Shoe	2.50@3.00¢
Best Cast Steel, base price in small lots	7¢

Sheets from Store—

Black

	One Pass, C.R. Soft Steel.	R. G. Cleaned.
No. 14	₩ ℔ 2.50	2.50¢
Nos. 18 to 24	₩ ℔ 2.95	3.10¢
No. 27	₩ ℔ 3.15	3.40¢
No. 28	₩ ℔ 3.20	3.50¢

Russia, Planished, &c.

Genuine Russia, according to assortment, W. Dewees wood ₩ ℔ 11¾@14½¢
Patent Planished ₩ ℔ A, 10¢; B, 9c, net.

Galvanized.

Nos. 14 to 16	₩ ℔, 3.15¢
Nos. 22 to 24	₩ ℔, 3.55¢
No. 27	₩ ℔, 4.00¢
No. 28	₩ ℔, 4.25¢

No. 20 and lighter 36 inches wide, 25¢ higher.

Genuine Iron Sheets—Galvanized.

Nos. 22 and 24	₩ ℔ ..5.50¢
No. 26	₩ ℔ ..6.00¢
No. 28	₩ ℔ ..7.25¢

Tin Plates—

American Charcoal Plates (per box.)

"A.A.A." Charcoal:

IC, 14 x 20	$6.40
IX, 14 x 20	7.65

A. Charcoal:

IC, 14 x 20	$5.45
IX, 14 x 20	6.55

American Coke Plates—Bessemer-

IC, 14 x 20	107 ℔	$4.45
IX, 14 x 20		5.45

American Terne Plates—

IC, 20 x 28 with an 8 lb. coating	$8 60
IX, 20 x 28 with an 8 lb. coating	10.60

Seamless Brass Tubes—

List December 4, 1905. Base price 18¢

Brass Tubes, Iron Pipe Sizes—

List December 4, 1905. Base price 18¢

Copper Tubes—

List December 4, 1905. Base price 21¢

Brazed Brass Tubes—

List August 1, 1908. 21¾¢ ₩ ℔

High Brass Rods—

List August 1, 1908. 15½¢ ₩ ℔

Roll and Sheet Brass—

List August 1, 1908. 15½¢ ₩ ℔

METALS—

Tin—

Straits Pig ₩ ℔ 32 @32¼¢

Copper—

Lake Ingot	₩ ℔ 14 @14¼¢
Electrolytic	₩ ℔ 14 @14¼¢
Casting	₩ ℔ 13½@13¾¢
Sheet Copper Hot Rolled, 16 oz.	₩ ℔ 18 ..¢
" " 14 "	" " 19 ..¢

Sheet Copper Cold Rolled, 1¢ ₩ ℔ advance over Hot Rolled.
Sheet Copper Polished 20 in. wide and under, 1¢ advance over Cold Rolled.
Sheet Copper Polished over 20 in. wide, 2¢ advance over Cold Rolled.
Bottoms, Pits and Flats ₩ ℔ 21¢ basis
Planished Copper, 1¢ ₩ ℔ more than Polished.

Spelter—

Western ₩ ℔ 5¾@5⅞¢

Zinc.

No 9, base, casks, ₩ ℔ 7.50¢ | Open ₩ ℔ 8.00¢

Lead.

American Pig ₩ ℔ 5¼@5⅜¢
Bar ₩ ℔ 6¼@6⅜¢

Solder.

½ & ½, guaranteed	₩ ℔ 20½@20¾¢
No. 1	₩ ℔ 17¾@18 ¢
Refined	₩ ℔ 15¾@16 ¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Cookson	₩ ℔ ..@11¢
Hallett's	@10½¢
Other Brands	@9½¢

Bismuth—

Per. ℔ $1.90@$2.00

Aluminum—

No 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:

Small lots	38¢
100-℔ lots	36¢
Rods & Wire	Base Price 38¢
Sheets	Base Price 40¢

Old Metals.

Dealers' Purchasing Prices Paid in New York

	Cents
Copper, Heavy and Wire	₩ ℔ 11.25@11.50¢
Copper, Light and Bottoms	₩ ℔ 10.25@10.75¢
Brass, Heavy	₩ ℔ 9.25@ 9.50¢
Heavy Machine Composition	₩ ℔ 10.50@11.00¢
Clean Brass Turnings	₩ ℔ 7.50@ 8.00¢
Composition Turnings	₩ ℔ 8.50@ 9. 0¢
Lead, Heavy	₩ ℔ ....@ 4. 0¢
Tea Lead	₩ ℔ ....@ 3.80¢
Zinc Scrap	₩ ℔ ....@ 3.0 ¢

THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

ISSUED EVERY THURSDAY MORNING.

Subscription, postpaid, $5 00 a year.

TWO DOLLAR EDITION, $2.00 a year, DOLLAR EDITION, $1.00 a year, to the United States, Mexico, Hawaii, Cuba, Philippine Islands. OTHER COUNTRIES: Weekly Edition $7.50; Semi-monthly Edition, $4.00; Monthly Edition, $2.50.

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